
Blaine House Conference on Maine's Natural Resource-based Industry: *Charting a New Course*

November 17, 2003



Conference Report

*With recommendations to
Governor John E. Baldacci*

Submitted by the Conference Planning Committee
Richard Barringer and Richard Davies, Co-chairs

February 2004

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The Conference Planning Committee is especially grateful to Jody Harris and Susan MacPherson. Their professionalism, energy, and dedication are in large measure responsible for the success of the conference.

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Award Winners

We would like to congratulate the following organizations and individuals who were awarded the 2003 Governor's Award for Outstanding Accomplishments in Maine's Natural Resource-Based Industries. The individuals and organizations receiving recognition represent the innovation, entrepreneurial spirit, and stewardship Maine seeks in its natural resource-based industries. These industries are not only the heart and soul of Maine; they define our landscape, our heritage, and our way of life.

Yvette Alexander, Harpswell

A tireless, hardworking supporter of Maine's groundfishing community

Naturally Potatoes, Mars Hill

An innovative potato processing facility

The Maine Aquaculture Innovation Center, Orono

A catalyst for developing aquaculture in Maine

The Advanced Engineered Wood Composites Center, Orono

Pioneers of new applications for our wood resources

The Maine Sea Kayak Guides and Instructors Association, Bangor

Making sea kayaking safe and compatible with coastal environments

Convening 750 people for productive discussions on the pressing matters confronting Maine's resource-based industries was a challenging task, in itself. Professor Jack Kartez of the Muskie School at USM provided support to the Planning Committee on design of this process for both the March Summit and November Conference. The members of the Planning Committee wish to thank Professor Kartez and the following individuals from Maine state offices, colleges and universities, and private practices who generously provided assistance as facilitators and recorders at these sessions. A number of individuals also attended the conference as resource people, to share their expertise as an aid to the discussions; we thank them, as well.

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Additional conference information may be found at the Governor’s Web site at http://www.maine.gov/governor/baldacci/news/events/natres_conference_1003.html. The web site includes speaker’s presentations, conference background papers, and draft departmental recommendations which conference participants discussed and which, after refining and redrafting, became the recommendations forwarded to the Governor as part of this report.

Executive Summary

Building a Sustainable Natural Resource-based Economy

Overview

Even the most cursory examination of Maine history reveals the profound role that fishing, farming, and forestry have played in shaping the culture and the character of our state.

By the time Maine was granted statehood in 1820, its seal and arms, with the mast pine at its center supported by a farmer and seaman, reflected the shared pride in her forests, agriculture, and fisheries. The display of a farmer, a fisherman, and the forest, land, and sea on Maine's state seal were apt choices in 1820, when nearly 80% of Maine's workers were employed in these industries. Wars were fought over Maine's fishing grounds, and its lumber was preferred by kings, even as Maine granite decorated their tombs. It was believed that Maine's prosperity was as permanent as the land and water itself.

The Looming Crisis

No one foresaw the industrial revolution, however. In the century that followed statehood, the number of Maine workers employed in fishing, farming, or forestry fell from 80% at its height to 40% in 1920. By 2000, the number employed in these industries had plummeted to just 8% of the workforce. Total employment in these three industries has been stagnant for three decades. A recent article in the *Bangor Daily News* characterized Maine's "once formidable natural resource-based economy (as) near obsolescence."

While employment in Maine's natural resource industries has fallen victim to global markets, increased domestic competition, and new technologies, it is the land and resource base that supports them that is at greatest risk. Those who earn their living from the land and sea face restricted access, development pressures, struggles to maintain productivity and environmental quality, and scientific and political uncertainty.

Even tourism, which many believe to offer the best hope for economic diversification and community revitalization, does not escape the pressure. Maine tourism depends directly upon her forests, farmlands, and coastal waters as sites for tourist activity and indirectly as its visual and cultural backdrop.

Maine's natural resource-based economy today – including farming, fishing, aquaculture, forestry, and tourism – faces multiple and serious challenges that threaten its long-term viability.

Today's Opportunities

Governor John Baldacci is convinced that these industries are important to Maine's character and culture, and especially, to our rural economies. They must be strengthened. To do so, there are challenges to be addressed and opportunities to be realized. His Administration has embarked on a collaborative effort, in partnership with academia and affected Maine citizens and industries, to unite the natural resource business sectors in common cause, and to "set us on a course that will lift all of

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Maine’s natural resource-based industries, and place them on the track of truly sustainable development.”

The challenges before this partnership are to create an effective vision for the natural resource-based businesses of Maine’s future; to develop practical strategies to overcome the challenges; and to seize the opportunities that the future holds.

Process Leading up to Conference

Eights months of planning and preparation led to a November 2003, Blaine House Conference on Natural Resource-based Industries, with a focus on agriculture, aquaculture, fishing, forestry, and tourism and outdoor recreation. In his 2003 budget address to the Legislature, Governor John Baldacci promised to bring together local residents, industry representatives, conservationists, sportsmen and women, and recreational users to work to address the needs of Maine’s natural resource-based industries.

The March Summit

In March 2003, Governor Baldacci convened a Natural Resource-based Business Summit of industry leaders, to identify issues and concerns within each of the natural resource sectors. The summit sparked a dialogue. It became clear that these industries share common problems, such as declining access to the resource base, a lack of sustainable view of development, and the need for credible scientific information; and that the way to tackle them is to stop thinking of the fishing, farming, forestry, and tourism sectors as distinctly different, independent entities. Summit participants realized they needed a strategic analysis of their industries and a shared understanding of the problems that each faces.

The Background Papers

From July to September 2003, six background papers were produced, one for each sector and one on cross-cutting issues, each authored by knowledgeable people in the field, in collaboration with the state agencies. The papers examined economic trends, strengths, challenges, and opportunities of each sector. They were designed to challenge our traditional ways of thinking and to identify new ideas to position fishing, aquaculture, farming, forestry, and tourism/recreation each as a long-term, sustainable natural resources-based industry. The papers also provided a starting point for outreach and discussion with industry representatives.

The Outreach Effort

The state’s natural resource agencies then used the papers to engage their important constituencies, to test the assumptions set forth, and to prepare strategies for strengthening each of the sectors. Literally hundreds of business leaders, industry representatives, managers, environmental and trade associations, and others within these sectors offered their best thinking about how government and industry could work together to achieve their goals. The dialogue led to a series of specific action recommendations that the agencies put forward for consideration by the conference participants.

The Blaine House Conference

On November, 17, 2003, nearly 750 people from across the industry sectors met in Augusta. Participants considered specific proposals to enhance each industry sector, as well as an array of issues that spanned all five sectors. The dialogue sparked new ideas, modified proposals, and confirmed many of the new approaches presented. The Governor’s goal – that from the conference might emerge a practical plan of action based upon new thinking, integrated policymaking, broad support, and active participation from Maine citizens who make their livings within the natural resources sectors – was realized. The conference shaped 75 proposals to strengthen these businesses that are presented in this report.

Summary of Recommendations for Action

Building upon the facilitated discussions of the Blaine House Conference, the members of the Conference Planning Committee offer the following three sets of recommendations. The first concerns ongoing maintenance of the collaborative effort started at the conference. The second addresses issues that “cut across” industry sectors. The third addresses specific industry sectors. **Before turning to these, we wish to state once again that the challenges facing Maine’s natural resource-based industries today are great and, in many cases, acute. They will not be addressed effectively except through strong, collaborative efforts among Maine’s private, public, and nonprofit sectors. Only these partnerships – combined with imagination and boldness – will be sufficient to brighten the prospects of these industries.**

1. Steering Committee. We recommend that the planning committee for the Blaine House Conference be permanently retained and re-named as a Steering Committee to:
 - Oversee and monitor progress in the implementation of the cross-cutting and sectoral recommendations below, and to report to the Governor on their progress on an annual basis, in November;
 - Create and implement a sustainable indicators and benchmarking project to track the health and well-being of Maine’s natural resource-based industries; to report progress on these indicators to the people of Maine on a biennial basis, in November of the year; and to make recommendations for program and policy changes to keep Maine on track;
 - Lead a coordinated visioning process (which takes into account information coming out of this conference) to develop a clear, comprehensive, balanced natural resource policy for Maine’s natural resource-based industries and goals within and across these sectors to move us towards a common vision;
 - Organize and conduct forums, as appropriate, for discussion and development of the many proposals and ideas put forward in the course of the Blaine House Conference;
 - Strengthen connections among industry leaders and establish a framework for action-oriented, positive discussion to bolster coordination and collaboration;
 - Undertake planning for a second Blaine House Conference, as appropriate, in the fall of 2005; and, in the meantime,
 - Carry out other such responsibilities as the Governor may wish to assign it, to advance the prospects of these industries.

At present the committee is comprised of representatives, one for each of the five sectors, from the cognizant state department and the scholarly community; and, for three sectors (aquaculture, fishing, and forestry), the private business community. We recommend that four additional persons be appointed; one each from private business in agriculture and tourism, and from the University of Maine System and the Community College System. We further suggest that staff support for the Steering Committee continue to be provided by the State Planning Office; and recommend that funding be sought from nonprofit sources for this ongoing monitoring and development effort, especially the indicators and benchmarking project and organization of the forums.

2. Cross-cutting Issues. 31 recommendations “cut across” the industrial sectors addressed at the Blaine House Conference and, frequently, across the responsibilities of several state agencies or departments, the University System, and the Community College System. For this reason, we recommend that the State Planning Office be charged with facilitating and monitoring their implementation; and it’s Director, with reporting on their progress in a timely manner to the Governor and the Steering Committee.
3. Sectoral Issues. The remaining recommendations are put forth by the state departments

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involved in organizing the Blaine House Conference, within their areas of jurisdiction, based on the dialogue with industry members before and during the conference. We recommend that these agencies be charged with responsibility for their timely implementation, making good use of your Natural Resources Sub-cabinet as a forum for discussion; and that their commissioners report on their progress regularly to the Governor and the Steering Committee.

Based on the work before, during, and after the Blaine House Conference, we recommend the following:

Cross-cutting Issues

Access to the Natural Resource

1. Create a comprehensive action plan to address the enormous pressures that rising land values are placing on fishing, farming and forestry landowners
2. Support a new Land for Maine's Future bond
3. Strengthen Maine's service center communities as a primary strategy for stemming the ill-effects of sprawl on rural Maine
4. Increase public information on "Right to Farm" and "Right to Fish" laws

Market Development and Branding

5. Explore the possibilities for developing a coordinated marketing theme for all of Maine's natural resource-based industries
6. Develop and formalize strong working relationships with government and industry in Atlantic Canada
7. Create and strengthen links between Maine agricultural entities and fisheries and Maine restaurants

Strengthening Small Business Support

8. Develop a comprehensive, natural resource-based industries education and skill development program
9. Develop affordable workers' compensation, group health, dental, and long-term care insurance options
10. Access adequate seasonal labor
11. Facilitate the development of cooperative and aggregated purchasing options

Objective Data, Research, and Science for Policymaking

12. Enhance and focus the natural resource research and development agenda in Maine's University System
13. Increase the state's capacity to provide certain technical assistance to the natural resource-based industries

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14. Continue to support state investment in research and development through bonding, as resources allow

Clear, Predictable Public Policy

15. Develop a clear, comprehensive, balanced natural resource policy for Maine that recognizes the importance of these industries to Maine
16. Establish a benchmarking process for the natural resource-based industries

Tax Policy and Economic Development Incentives

17. Eliminate the personal property tax on machinery and equipment for investments made after April 2004
18. Develop a regulatory support system for all small businesses in these industries
19. Develop a comprehensive plan for reducing energy costs across all industries
20. Improve access to technology and financial assistance by taking development resources to the regions
21. Study the potential elimination or reduction of the sales tax for diesel fuel consumed on fishing vessels and in logging operations

Coordination/Collaboration across Industries & Government Agencies

22. Empower an inter-industry team to develop a long-term plan for developing productive, multi-use forests
23. Foster collaboration among tourism, aquaculture, and other uses of Maine's coast.
24. Create a clearinghouse of natural resource policy initiatives.
25. Formalize the work of the Blaine House Conference on Natural Resource-based Industries planning committee into a standing steering committee to the Governor

Public Infrastructure

26. Give priority to the implementation of the Maine Department of Transportation's *Explore Maine* passenger transportation plan
27. Give priority to the implementation of the Maine Department of Transportation's Integrated Freight Plan
28. Set up an interagency working group to identify the infrastructure and services necessary to support Maine's natural resource-based industries
29. Create a state strategic plan for developing and maintaining public warehousing capacity
30. Continue to support state investment to construct affordable workforce housing
31. Increase the development and placement of historical and interpretive signage

Sectoral Issues

Agriculture

- 32. Establish a statewide policy on water use for agricultural purposes
- 33. Expand the Department of Agriculture's existing agricultural water development program
- 34. Value working farmland
- 35. Explore options for preserving farmlands
- 36. Build on current agricultural land protection programs
- 37. Create a Local Agriculture Development program
- 38. Help commodity agriculture farms maintain or improve their cost competitiveness

Fisheries and Aquaculture

- 39. Create the best possible outcomes for Maine fishermen from Amendment 13
- 40. Support the Groundfish Task Force
- 41. Restore the balance between conservation and resource use in the Sustainable Fisheries Act
- 42. Facilitate consensus-building within the recreational and commercial fishing communities
- 43. Direct the Department of Marine Resources to undertake a long-range planning process
- 44. Support legislation to add "fisheries" to the list of purposes for which a conservation easement may be established
- 45. Support additional bond funding for the Small Harbor Improvement Program
- 46. Support state funds for acquisition of public water access sites through the Land for Maine's Future Program
- 47. Explore the possibility of an infrastructure bond package to support commercial water access and key working waterfront facilities
- 48. Set priorities for cold water marine research
- 49. Expedite the plan for the Maine Institute for Cold Water Aquaculture at the University of Maine
- 50. Support bond funding for cold water marine research in the Gulf of Maine
- 51. Support the vision and principles for aquaculture established by the Aquaculture Task Force
- 52. Carefully review and, if appropriate, adopt Aquaculture Task Force recommendations
- 53. Develop and implement an aquaculture public information plan
- 54. Encourage other state agencies to support aquaculture

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Forestry

55. Identify strategies to recruit and retain loggers
56. Examine ways to reduce energy costs
57. Examine ways to reduce transportation costs
58. Examine state's tax policies and their impact on investment in forestry
59. Analyze how to make Maine's forest products industry more competitive
60. Determine the attitudes of Maine citizens regarding the forest products industry
61. Develop creative partnerships between managed forests and tourism and outdoor recreation
62. Replenish the Land for Maine's Future Program
63. Use the state's Forest Certification Initiative to enhance marketing of Maine's forest products
64. Focus on the unique attributes and competitive advantages of Maine's wood species to grow this industry
65. Evaluate the potential of carbon trading
66. Create a "Market Development Alliance" to focus the industry on entrepreneurship and develop outreach and education programs and mentoring opportunities
67. Track forestry information needs
68. Examine trade policies that contribute to declines in forestry manufacturing

Tourism and Outdoor Recreation

69. Convene a development committee to develop degree, research, and extension programs in Hospitality and Recreation
70. Broaden the Department of Economic and Community Development's tourism capabilities
71. Improve tourism and recreation business incentives
72. Coordinate recreational land-use management
73. Establish processes to bring sustainable development criteria into tourism planning
74. Increase the state's to provide certain technical assistance to municipalities seeking tourism industry growth
75. Explore a comprehensive Maine branding campaign



Recommendations

Cross-cutting Issues

Maine's natural resource-based industries – fishing, farming, forestry, aquaculture, and tourism – each is wonderfully unique, fiercely independent, and distinctly separate; yet, whether logging contractors, commercial fishermen, family farms, bed and breakfast operators, sports camp owners, or holders of aquaculture leases, there are undeniable commonalities and inextricable links among them. Now is the time to strengthen those links and come together to develop a joint course of action. Fishing, farming, forestry, aquaculture, and tourism are now loosely woven together, but we must grow to appreciate the strength of a tighter weave. As the world economy has changed, the pressures bearing down on Maine's businesses and natural resources are enormous, unforgiving, and demand a new and coordinated approach.

Individually, the traditional natural resource-based industries represent a relatively small portion of Maine's economy. But collectively, aquaculture, fishing, farming and forestry start to amass political, financial, and market clout; and when we add tourism – an industry based in part on the very natural resources the others steward – that clout is doubled. Together, these industries account for approximately one out of every five jobs in Maine. Together, they contribute about one out of every five dollars of wealth generated. Together, they have a major presence in each of the 16 counties. But to take advantage of all of this collective muscle, we must clearly understand the issues they share and work together towards common solutions that benefit all.¹

The conference participants examined the recommendations put forth and, in almost every instance, supported what was proposed or made suggestions to strengthen them. The recommendations address eight areas that the sectors have in common:

1. Access to the very natural resource-base on which the industries depend
2. Market development that takes advantage of the "Maine" brand
3. Small business support
4. Objective data, research, and science for policymaking
5. Clear and stable public policy
6. Tax policy and economic development incentives
7. Coordination/collaboration across industries and government agencies

Access to the Natural Resource

For Maine's natural resource-based industries to survive and prosper, it is essential for them to have effective and continuing access to the resource they use – be it large, relatively flat and open land for farming, forests for harvesting wood, shore frontage and docking facilities for commercial fisheries and aquaculture, or Maine's lakes, rivers, mountains, ocean, and forests for hunting, fishing, hiking, boating and camping. There are four major trends that have been limiting access to the resources these industries need for survival:

¹ Lachance, Laurie. *Finding Common Solutions*. State Planning Office, Augusta, ME, October 2003.

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- Patterns of Development – Land in Maine, particularly in southern and coastal areas, is being consumed at an alarming and accelerating rate which has fragmented the land base and put strain on the industries that rely in it.
- Rising Valuations – As development occurs, the value of land, as well as the property taxes associated with it, rises, putting pressure on those trying to continue traditional natural resource activities.
- Conflicting Uses – The result of development is the rise in conflicting uses, with tensions arising between farmers and neighboring residents, and fisherman and retail businesses and upscale homes along the shoreline.
- Forestland Ownership Changes – There have been deep and unsettling changes in forestland ownership over the last decade. In some cases, major land parcels have changed ownership two or three times, or large tracts have been divided and sold into much smaller parcels. The changing ownership patterns generate unease about the continued availability of these lands for forest management and wild land recreation.

1

Recommendation: Create a comprehensive action plan to address the pressures that rising land valuations are placing on fishing, farming and forestry landowners – The Departments of Conservation, Marine Resources, and Agriculture should work with the state tax assessor and the Working Waterfront Coalition, the Agriculture Council of Maine, the Maine Tourism Commission, and other industry stakeholders to address the issues around rising land valuations and the pressure it exerts on these industries to sell off land. A “tool kit” of tax, fiscal, and regulatory incentives should be developed that enables flexible, effective approaches to the varied issues across these sectors. As part of its work, the group should recommend a tax proposal regarding farmland, forests, and working waterfronts for consideration in the next legislative session, in January 2005.

2

Recommendation: Support a new Land for Maine’s Future bond – There remains an urgent need for state-funded land conservation in Maine that supports the natural resource-based industries. The Land for Maine’s Future Program should continue to work with the Departments of Agriculture, Conservation, Economic and Community Development, Inland Fisheries and Wildlife, and Marine Resources to coordinate the various public and private planning efforts. It should continue to look for opportunities where land conservation can support economic and community development, and conserve the natural resources that form the basis of the state’s economy, including farmland, working forests, coastal water access, and recreation lands.

3

Recommendation: Strengthen Maine’s service center communities as a primary strategy for stemming the ill-effects of sprawl on rural Maine – The State Planning Office, in developing the Governor’s fiscal reform and smart growth agendas, should explore avenues for strengthening Maine’s service centers to the fullest extent possible in an effort to alleviate the development pressure on rural land.

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Recommendation: Increase public information on “Right to Farm” and “Right to Fish” laws – The Departments of Agriculture and Marine Resources should work with the Maine Real Estate and Development Association to raise awareness of and these laws and the implications of settling next to working farms and waterfronts. The public information should also educate the public of the importance of these industries in Maine.

Market Development and Branding

With the commoditization of product markets and the evolution of fierce global competition, it has become increasingly difficult for comparatively small Maine enterprises to compete. Fortunately, the Internet has provided an entirely new marketing option that has enabled Maine businesses to reach out across the globe in a manner and to a degree that they could never have done through traditional marketing channels. Further, we are starting to appreciate the fact that “Made in Maine” products, with a government and business culture of sustainability, are respected and valued, providing advantageous market opportunities for Maine businesses.

5 ***Recommendation:** Explore the possibilities for developing a coordinated marketing theme for all of Maine’s natural resource-based industries – The Department of Economic and Community Development should be charged with developing, to the fullest extent possible, one common theme under which all of Maine’s natural resource-based products may be marketed. If one comprehensive brand is found to be unworkable or impractical, the department should lead efforts to develop brands for the five industry sectors which will complement and reinforce each other, maximizing the effect of Maine’s limited marketing dollars. A first task for the department to undertake would be to meet with leaders across all five sectors to identify funding streams to support this branding and marketing effort.*

6 ***Recommendation:** Develop and formalize strong working relationships with government and industry in Atlantic Canada – The Department of Economic and Community Development should charge the Maine International Trade Center and the natural resource agencies with developing a plan to strengthen marketing opportunities for natural resource-based products by creating partnerships with neighboring Canada and exploring joint production and marketing of such products as mussels, lobster, ground fish and salmon, as well as agricultural and forest products.*

7 ***Recommendation:** Create and strengthen links between Maine agricultural entities and fisheries, and Maine restaurants – The commissioners of the Maine Departments of Agriculture and Marine Resources should invite Maine wholesalers, the Maine Restaurant Association, in cooperation with the Eat Local Foods Coalition, the Maine Innkeepers Association, the University, and the Community College System to work with the departments in developing strong marketing channels that enable Maine restaurants, inns, and college campuses to feature Maine food products. This effort should also include outreach to Maine’s government facilities, schools, hospitals, summer camps, and other institutions.*

Small Business Support

When you strip out the paper industry and a few large resorts or recreational facilities, the vast majority of people employed in Maine’s natural resource-based industries work in small businesses. In fact, not only are these businesses small, but in many cases they are considered micro-enterprises, which tends to magnify the challenges they face. Further, given their dependence on natural resources, these small businesses are spread across the state and often located in Maine’s most rural areas. Given their remote locations and small scale, it is difficult to secure affordable insurances, to access technical and educational training, to participate in political processes, or to gain clout or purchasing power in the market place. Lack of time and resources make it difficult to visit other operations, seek out best business practices, or negotiate deals with vendors. In addition, the very nature of the work is often

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relatively dangerous, adding unusually high costs to insuring their businesses, or, as is sometimes the case, forcing them to be under-insured.

- 8 **Recommendation:** *Develop a comprehensive natural resource-based industries education and skill development program – A natural resource-based industries education council should be formed to include members from the University System, the Community College System, the Departments of Labor, Education, Economic and Community Development, and the small business development centers. The Council should be charged developing a seamless, comprehensive educational and skill development program that ensures the provision of: (a) basic business skill and entrepreneurial development programs across all five industries; (b) comprehensive apprenticeship and mentoring programs for all of the natural resource-based sectors; (c) articulation agreements that offer an educational ladder from high school through the University System ; and (d) a strategy for identifying best practices in each of the five sectors and using existing channels to get information and training opportunities out to the sectors.*
- 9 **Recommendation:** *Develop affordable workers' compensation, group health, dental, and long-term care insurance options – The Departments of Labor and Professional & Financial Regulation should form and empower an interagency working group to work with industry to secure and provide reasonably-priced insurances for small businesses across all of these industry sectors.*
- 10 **Recommendation:** *Access adequate seasonal labor – The Department of Labor should develop a program (building on existing programs) that identifies, screens, and secures appropriate domestic and foreign workers to fill seasonal jobs during peak tourist season and key agricultural harvesting periods.*
- 11 **Recommendation:** *Facilitate the development of cooperative and aggregated purchasing options – The commissioners of the state's natural resource agencies should form an inter-industry and interagency working group to explore the opportunities for aggregated electricity purchases, heating and transportation fuel bulk purchases, and other commodity cooperative purchases for small business across all of these industry sectors.*

Objective Data, Research, and Science for Policymaking

All of Maine's natural resource-based industries need good, objective information on which business and policy decisions may be made. From the tourism industry, there is a plea for establishment of a high-level center of on-going basic and applied research into the economic, physical, and cultural attributes of Maine's hospitality and recreation industry. Tourism, agriculture, and the fisheries share the common need for accessing and applying best practices, for developing measures of carrying capacity, and for identifying and capturing new markets. The commercial fisheries, most critically, but aquaculture, agriculture and the forest products industries as well, desperately need scientific research to guide the use and development of their resource, and to assure that sustainable harvesting practices are put in place. As natural resource industries increasingly use more complex adaptive management regimes, capacity in complex system science needs to expand.

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Further, Maine has an opportunity to take the lead in cold water marine research. By building on the efforts of the University and existing public and private research facilities in Maine, we can keep fishing jobs and create new jobs in marine sciences.

- 12 **Recommendation:** Enhance and focus the natural resource research and development agenda in Maine's University System - The Governor and the University System should explore further opportunities for strengthening the research agenda that supports the ongoing health and viability of Maine's natural resource-based industries. The plan should encourage user-defined research and lay out plans and incentives for encouraging faculty, graduate, and undergraduate research to focus on issues that are of major concern to Maine industry. The agenda should specifically address needs in risk assessment so that industry can better analyze decision making trade-offs, in geographical information systems (GIS) and other spatial information on both small scale and large scale, and in the application of complex system science to natural resource issues. The plan should examine the potential for endowed chairs and centers for research on relevant topics and involve math, statistics, and economics classes in real life, Maine-based problems to heighten the awareness of students to the issues faced by Maine businesses and natural resource communities and to contribute information and data to them. The plan should include strategies for improving communication of existing data and research to potential users and should assure that parties in disputes have access to good science and credible mediation services, including the creation of a Maine Academy of Science to resolve competing research results in contested resource issues and to insure that the best information is brought to bear in the decision-making process.
- 13 **Recommendation:** Increase the state's capacity to provide technical assistance to the natural resource-based industries – The Departments of Conservation and Economic and Community Development and the State Planning Office should explore ways to create better capacity for risk assessment, so that industry may better analyze decision-making trade-offs; and improve the capacity and the resources for using geographical information systems (GIS) and other spatial information on both the small-scale and large-scale.
- 14 **Recommendation:** Continue to support state investment in research and development through bonding, as resources allow – As Maine's economy transitions from traditional manufacturing to a knowledge economy, the development of new products and services from our natural resources offers tremendous potential. It is important to invest in research and development to transform our mature natural resource-based industries using the same resources, but with new and higher value in a new economy.

Clear and Stable Public Policy

Within any economic sector, clear and stable public policy facilitates long-term viability and overall success. Lack of clarity can diminish the potential effectiveness of programs and investments. Worse yet, unpredictable, frequently changing public policy increases risks to investors, diminishing the number and level of investments in our state. Without appropriate investments in capital equipment, technology, and skill development, these industries will be unable to compete.

The lack of a clearly-defined and articulated, stable natural resource policy has led to frustration among stakeholders and potential investors, periods of disruption in economic activity, and the deferment or cancellation of needed investments in Maine. The clear-cutting referendum led to years of bitter dispute and suspension of investment in our forest products industries. The perennial heated debate over funding the Business Equipment Tax Reimbursement deters capital investment, as investors are not sure whether they may count on the incentive going forward. The lack of a clear strategy for aquaculture development has led to numerous controversies and uncertainty up and down the coast of Maine.

The presence of clear and predictable expectations, guidelines, and rules will greatly enhance the viability of all sectors and organizations working within them.

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Recommendation: *Develop a clear, comprehensive, balanced natural resource policy for Maine that recognizes the importance of these industries to Maine – The Natural Resource-based Industries Steering Committee should lead a coordinated visioning process (which includes representatives of each industry, environmental concerns, and academic institutions, and takes into account information coming out of this conference) which results in a clearly articulated vision for Maine’s natural resource-based industries and goals within and across these sectors to move us towards that vision.*

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Recommendation: *Establish a benchmarking process for Maine’s natural resource industries – The Natural Resource-based Industries Steering Committee should develop indicators specifically for the natural resource-based economy; reviewing the annual benchmarking results; and recommending policy or program changes to keep Maine moving toward the vision for these industries. The Maine Economic Growth Council’s Measures of Growth benchmarking process uses targeted indicators to assess the state of the economy and is an invaluable resource to Maine leaders for policy development. The natural resource industries’ benchmarking process could be modeled after or incorporated into the Measures of Growth report.*

Tax Policy and Economic Development Incentives

Maine’s tax structure and relatively high tax burden are clearly issues that cut across the natural resource-based industries. From the conference, two taxes emerged as the most problematic, the property tax and the personal property tax on machinery and equipment. Burdensome property taxes squeeze farmers and timberland owners, and pose extreme threats to fishermen who live and work on coastal properties. To a certain extent, current use valuation has relieved the pressure of this tax on farmers and foresters, but no such program exists for fisherman. The personal property tax on machinery and equipment is seen as a deterrent to capital investment, and puts all Maine business at a competitive disadvantage.

In the March 2001 report, *Fishing, Farming and Forestry: Resources for the Future*, researchers found that while these sectors contribute less than 10% to Maine’s gross state product, they garnered nearly

Clearly, there is opportunity within these sectors to tackle more effectively the issues they have in common if there were a higher degree of coordination and collaboration. Additionally, each sector is served by a different state department or, in some cases, federal agency. Greater coordination of government interests has tremendous potential for effectively aiding in the development of these sectors.

- 22 **Recommendation:** Empower an inter-industry team to develop a long-term plan for developing productive, multi-use forests – The Department of Economic and Community Development should work with the Departments of Conservation and Inland Fisheries and Wildlife to develop a long-term plan for identifying eco-tourism and cultural tourism assets, directly linking the outdoor recreation and tourism industries with Maine’s green forest and forest products industry, and encouraging partnerships with landowners for specialized recreational activities.
- 23 **Recommendation:** Foster collaboration among tourism, aquaculture, and other uses of Maine’s coast – To accomplish this, the Departments Economic and Community Development and Marine Resources and State Planning Office should engage the Working Waterfront Coalition in developing an informational campaign describing the working waterfront and the many benefits of Maine’s multi-use waterfronts. Outreach materials should be distributed to tourism businesses, visitor centers, and municipal offices.
- 24 **Recommendation:** Create a central clearinghouse of natural resource policy initiatives – The State Planning Office should develop and maintain a Web-based listing of all research, planning, and policy efforts to ensure that state planning and policy development is known and open to all interested parties.
- 25 **Recommendation:** Formalize the Blaine House Conference on Natural Resource-based Industries Planning Committee into a standing Steering Committee to the Governor, to ensure continuity of this effort and strengthen cross-industry coordination in the future – In addition to formalizing the Committee’s role, its membership should be broadened to include appropriate private sector representation from each of the major industry groups.

Public Infrastructure

Infrastructure is the foundation that supports all economic activity. Nowhere is traditional infrastructure more important than in the natural resource-based industries. Road networks, ports, piers, airports and railways are critical to the survival of each of these industries. Though the focus may vary, the overall importance is beyond question. Inputs to and exports of the paper industry rely heavily on rail and ports with warehousing infrastructure. Agricultural and wood products depend heavily on adequate roadway systems. The fishing and aquaculture industries rely on accessible, fully equipped piers and vibrant ports. Tourism’s vitality is based, in large part, on safe, efficient highways, airports, and alternative transportation systems.

In addition to the public infrastructure, there is an array of private infrastructure and services that support these industries. These include dock services for cruise ships, ice plants for keeping fish fresh, sawmills for the forest products industry, grain suppliers, storage, and tractors for agriculture, to name but a few. There is a critical mass of support services on which these industries depend. In Portland, for example, there is a sole ice plant that produces ice for all the fishing boats, the Fish Exchange, and other wholesalers and retailers that get product from the sea to market. If that plant becomes unable to supply ice, it would severely disrupt the fishing industry in that area. Without these services or without

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them in sufficient quantity and quality to meet the industries needs, the industries themselves cannot operate.

Affordable workforce housing is also part of the infrastructure that supports Maine's natural resource-based industries. Real estate prices have become most extreme in the very areas where the workers employed in Maine's natural resource-based industries live, forcing them away. Industries struggle to attract a workforce because workers cannot afford to live in or relocate to the communities where they need to live to be close to their workplace.

- 26 **Recommendation:** Give priority to the implementation of the Maine Department of Transportation's "Explore Maine" passenger transportation plan – This plan calls for the development of an integrated, multimodal approach for moving visitors and residents into and throughout Maine without dependence on the automobile. Explore Maine calls for public and private investments to support rail, marine, bus, and air transportation, as well as bicycling and pedestrian trails.
- 27 **Recommendation:** Give priority to the implementation of the Maine Department of Transportation's Integrated Freight Plan – The plan calls for the development of a multimodal approach to moving goods into and throughout Maine by trucks, rail, and ships. This plan includes the Maine DOT's 3-port strategy to focus marine infrastructure investments in Eastport, Searsport, and Portland.
- 28 **Recommendation:** Set up an interagency working group to identify the infrastructure and services necessary to support Maine's natural resource-based industries – The Departments of Agriculture, Conservation, Economic and Community Development, and Marine Resources should work with industry representatives to identify the public and private sector facilities and activities that are needed to support industry, analyze their current ability to meet industry needs, and make recommendations for ensuring key infrastructure and services can endure.
- 29 **Recommendation:** Create a strategic plan for developing and maintaining public warehousing capacity. The Department of Transportation should develop this as part of their long-term transportation plan.
- 30 **Recommendation:** Continue to support state investment to construct affordable workforce housing – The Maine State Housing Authority should continue its work to develop affordable housing for Maine's workforce using a variety of state bond, federal, and private funding.
- 31 **Recommendation:** Increase the development and placement of historical and interpretive signage – The Departments of Agriculture, Conservation, Economic and Community Development, and Transportation should work together to develop signage that encourages tourists to visit Maine's farmers' markets, farm stands, and recreational and eco-tourism sights.

Agriculture

Maine agriculture is a vital component of rural Maine and a substantial contributor to the Maine economy. Viewed as producers and processors of commodities, Maine agriculture contributes about \$425 million annually in direct farm sales, and Maine food processors have sales of nearly \$1 billion. However, because our resource base is limited and global competition is increasing, commodity farming has declined in real terms since the mid-1970s. Maine agriculture can also be viewed as a state food system. Here, direct sales of food products and services in Maine total \$3.3 billion, with 57% of that in retail distribution, 30% in food processing, and 13% in agricultural production. Maine farmers get less than 4% of the \$3 billion of food expenditures by Maine households. There appears to be substantial growth opportunity for Maine farmers in this component of Maine agriculture.²

The three agricultural breakout sessions at the Blaine House Conference considered these facts and a number of policy proposals offered by the Department of Agriculture, Food, and Rural Resources. Conferees were generally supportive of the department's proposals, and recommended four policy initiatives: 1) agricultural water development, 2) farmland protection, 3) local agriculture development, and 4) commodity agriculture cost competitiveness.

Agricultural Water Development

In the past three years, over one-third of crop losses in Maine has resulted from drought. In the past, Maine farms received higher profits per unit of output, making episodic losses from drought less critical. Today, losses from drought can wipe out several years of gains. In addition, buyers of Maine products, both for fresh use and processing, demand consistent quality of product across seasons, making supplemental irrigation a necessity on many farms.

This demand comes at the same time Maine farmers are losing access to historical water supplies. In the past, farmers pumped water directly from streams or dammed streams to provide irrigation water sources. Today, regulations and demands for water for other uses substantially reduce farmers' ability to use these water sources. Furthermore, Maine has limited access to alternative water supplies. We lack large, easily accessible aquifers found in many agricultural states; we have no river systems dammed to provide irrigation water for agriculture; and concern for wetlands protection requires farmers to build costly upland reservoirs from which to irrigate. Lack of access to water deteriorates Maine agriculture's competitive position.

In response, the Department of Agriculture and concerned commodity groups supported legislation creating a cost-share program with farmers to develop farm water reservoirs. The program to date has invested just under \$1 million, providing irrigation to 2,838 farmland acres and preventing nearly \$9 million of crop losses. Bonds, which currently fund the program, are spent and there is a need to extend and formalize authority for the program. A recent survey indicates the need for an additional \$15 million over the next five years. In addition to developing water sources, many farmers also need help to develop efficient irrigation systems. These needs and responding strategies are presented in the 2003 *Growing Agriculture: Sustainable Agricultural Water Source and Use Policy and Action Plan*.

Irrigation is critical to the financial viability of Maine agriculture and water use is increasingly contested among different users. The state needs a clear policy on agricultural water use and programs to assure that farmers have adequate water availability and appropriate user techniques within that policy. The state should offer appropriate grants and loans to support farmer development of appropriate water sources and irrigation technology.

² Smith, Stewart. *Maine Agriculture: A Natural Resource Based Industry Constantly Adapting to Change*. University of Maine, Orono, ME, October 2003.

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Recommendation: Establish a statewide policy on water use for agricultural purposes – This would (a) Give agriculture the priority use and would be effective across all state agencies; (b) Establish an efficient permitting process for farmers developing water use projects; and (c) Formalize the current agricultural water management committee currently advising the department.

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Recommendation: Build on the department’s existing agricultural water development program (a) Support \$15 million in bond issues over the next five years starting in 2005; (b) Expand the program’s purposes to include grants and loans for efficient irrigation systems, loans for water source development, and technical assistance for farmers; and (c) Increase the use of federal funds consistent with the increase in state support.

Farmland Protection and Right to Farm

Maine agriculture depends on an adequately productive land base. In 1997, Maine had 1.2 million acres in farmland, a decline of more than 50% since 1964. According to the State Planning Office, between 1992 and 1997, Maine converted 33,560 rural acres per year to development, a rate four times that of the previous decade, and greater than the combined cropland in nine Maine counties. Residential development pressure extends the length and breadth of Maine, boosting market values above those generated by agricultural production. It has resulted in the loss of a substantial volume of land used by the livestock industry to pasture animals and produce feed crops.

Besides increasing the incentive for farmers to sell their land for development, especially when they leave farming, development pressures also increase the valuation of farmland for property tax assessment. The Farmland and Open Space Tax Law provides for the valuation of classified farmland based on its current use as farmland or open space, rather than its potential value for more intensive uses. Owners of farmland must work with their town’s assessor to enroll in the program. While the penalty for withdrawing from the program was reduced by the 119th Legislature (farmers pay back five years of tax savings plus interest), the program is still misunderstood and underused, resulting in sporadic requests for general assessment of farmland at current use values or other initiatives to reduce the property tax burden on Maine farms.

Donation or purchase of development rights in exchange for agricultural conservation easements is the primary technique used in Maine to permanently protect farmland. The Land for Maine’s Future Program (LMF), with the mandate to spend up to 10% on farmland protection efforts, is the primary state financing mechanism. It is complemented by the USDA Farm and Ranch Lands Protection Program (FRPP) which provides a cash match of up to 50% of the appraised value of the development rights. While support from the LMF and FRPP have had some notable success with protecting specific farmlands in southern and central Maine, more resources are needed to develop and implement a comprehensive farmland protection program that will assure the future land base for a viable agricultural industry throughout Maine.

Blaine House conferees urged the state to evaluate a number of options for protecting Maine’s farmland, including the use of long-term (30-50 year) lease easements and regional voluntary landowner programs, like agricultural districts, that offer tax benefits and purchase (or transfer) of development rights to those who enroll. They also suggested that Maine’s Right to Farm Law, which currently focuses on protecting farmers from nuisance complaints and promoting agricultural best management practices, might be more effective if incorporated into a comprehensive farmland protection program.

- It is time to initiate a comprehensive policy and program that helps assure the availability of an
- adequate farmland base for Maine's future, without eroding the equity of Maine's farm families. This
- can be done by building on the work in place at the Department of Agriculture as outlined in *Saving*
- *Maine's Farmland: A Collaborative Action Plan* (2003), the result of a two-year planning process to
- address farmland loss statewide.

- 34 **Recommendation:** Value working farmland – The Natural Resources Industries Steering Committee should establish a policy that recognizes the value of working farmland to the state and incorporate that policy into state land use initiatives, including tax reform.
- 35 **Recommendation:** Explore options for preserving farmland – The Department of Agriculture should work with the Agricultural Council of Maine and the Maine Agricultural Center at the University of Maine to determine the role of property tax, agricultural conservation easements, and long-term leases in farm viability, and recommend policies and programs to address those findings.
- 36 **Recommendation:** Build on current agricultural land protection programs – The Department of Agriculture should: (a) Establish measurable goals for agricultural land protection (# acres and # farms in specific regions), (b) Assess appropriate techniques for achieving those goals and identify the most appropriate role for the state, and (c) Expand current programs where appropriate.

Local Agriculture Development

Local agriculture, where food products are produced and consumed locally, provides a great opportunity for growth in farms in Maine. Agricultural production totals about \$3.3 billion annually from farming 13% (~\$435 million), food processing 30% (~\$1 billion), and food distribution and retailing 57% (\$1.9 billion).

Maine households purchase about \$3 billion of food products and services annually, but less than 4% of that is from Maine farmers. Much more of the Maine food system could be supplied by local agriculture. If Maine farmers provided 10% of Maine food consumers' goods and services, farm income would increase by \$180 million annually – a 40% increase in farm income.

A growing local agriculture represents the best opportunity for maintaining Maine farms and for offering opportunities to entering farmers. While local agriculture has often been perceived to consist of small-scale and part-time farms, it represents over a quarter of Maine's farm income and a majority of Maine's farms. Its growth potential is substantial and can be bolstered by state policy that will require a new initiative in the Department of Agriculture. Local agriculture should be recognized as a substantial component of Maine agriculture, placed in the mainstream of the agricultural community, and receive appropriate policy and program support.

- Recommendation:** Create a Local Agriculture Development program—The Department of Agriculture should: (a) Determine the potential for local agriculture; (b) Provide technical assistance, in cooperation with University of Maine research and extension, to farmers regarding Maine consumer preferences for foods and services, and the appropriate structure and operation of local agriculture farm systems; (c) Provide financial assistance to farmers entering into or expanding local agriculture, with a business development and implementation grants program of \$2 million annually and a

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revolving loan program of \$5 million funded from a bond issue (Note: Grants for business planning and modest implementation may be made through the Farms for the Future (FFF) program. Current FFF funding will require most of program capacity for 2 years. With some statutory language, the program could add a local agriculture component without compromising its current responsibilities. Loans may be made through FAME after a FFF review); (d) Support increase in value-added processing for local markets; and (e) Promote mechanisms that establish connections between consumers and producers.

Commodity Agriculture Cost Competitiveness

The viability of Maine's commodity agriculture depends on their cost competitiveness. While local agriculture is the fastest growing component of Maine agriculture, commodity agriculture, where farms grow commodities for regional, national, and international markets, still represents the largest component of Maine agriculture. Maine farmers produce annually about \$100 million of potatoes, \$100 million of milk, \$60 million of eggs, \$30 million of blueberries, \$25 million of nursery, \$20 million of vegetables, \$15 million of cattle, \$10 million of apples, and a number of commodities with lesser sales.

In round numbers, altogether, sales at the farm level totaled \$419 million in 2001. Thirty years ago Maine agriculture, with a slightly different mix of commodities, was \$400 million, representing a substantial decline in real value since the mid-1970s.

In addition to farm sales, commodity agriculture includes processing that converts raw agriculture products grown in Maine into processed products for sale to consumers or for further processing, especially for milk, blueberries, and potatoes. This industry segment represents about \$500 million of sales, or about 50% of total food processing in the state, and is vital to the viability of commodity farming.

Because commodity agriculture competes in national and global markets, cost competitiveness is essential for its viability. Maine is recognized as a relatively high cost farming area. The concern for cost competitiveness of Maine's commodity agriculture is broad. The Agricultural Council of Maine is currently evaluating a number of state policies that impact farming costs. The Governor's Task Force on the Sustainability of the Dairy Industry in Maine called for a Dairy Management Improvement Fund and other strategies to assist the dairy industry to reduce costs and improve competitiveness. Programs to overcome cost disadvantages will have to be carefully constructed to be effective, since many program impacts will be primarily delaying an inevitable decline in farm numbers.

While Maine is considered a relatively high cost agricultural state, appropriate state policies can assist Maine commodities to remain competitive, even as the number of commodity farms decline and remaining farms become larger. The conference closing panel summary listed a number of items affecting costs, but focused on those affected by government policy, including state policies, taxes, and health insurance. However, cost disadvantages for Maine farms extend beyond state policies.

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Recommendation: Help commodity agriculture farms maintain or improve cost competitiveness – The Department of Agriculture should create a task force, with cooperation from the Agricultural Council of Maine and assistance from the University of Maine, to assess and define the role of state government in helping commodity agriculture farms maintain or improve their cost competitiveness.

Fisheries and Aquaculture

We face a fundamental, overriding, and potentially disastrous problem in our fisheries today – a governance process that works against fishermen’s collective, rational interest in conservation. Decisions about conservation are usually avoided because no one can capture the benefits and, in addition, because we don’t have (and probably never will have) the scientific ability to know exactly the right thing to do. The result for the state has been the effective loss of most of its fisheries and impoverishment of the ecosystem of the Gulf of Maine. Even the fisheries that remain viable, such as the lobster fishery, are continually at risk because of the loss of ecosystem structure. We must address these issues. That process has begun in the lobster fishery, but it needs to be strengthened there and adapted and expanded to our other fisheries. If we don’t do this, we will never solve the conservation problem and are very likely to have no viable fisheries in the near future.³

Aquaculture has greater potential for significant growth than any other seafood industry; but it has generated controversy for a variety of reasons. Both industry proponents and those concerned about it for various reasons identify the climate of uncertainty as their principal concern. Aquaculture in Maine is symptomatic of increasing conflicts over coastal uses, real and potential. The challenge is to accommodate and balance the various interests and concerns for coastal development – of which aquaculture is the most conspicuous and urgent point of contention.⁴

The Governor’s Office, in conjunction with the Department of Marine Resources, has initiated three proposals that either parallel the efforts of the Blaine House Conference, or build on the ideas generated by the conference.

First, at the request of the groundfish industry, the Governor appointed a Groundfish Task Force. This group of 12 members will address both short- and long-term issues facing the groundfish industry. The Groundfish Task Force will submit its final recommendations to the Governor by June 30, 2003.

Second, the Governor supported the Legislature in its appointment of the Aquaculture Task Force, consisting of non-industry members who have some experience in public policy. The task force conducted an in-depth, six-month study of Maine’s aquaculture industry. They heard testimony and accepted comments from a wide range of stakeholders and carefully weighed a number of differing perspectives as part of their study. The task force presented its findings and recommendations to the Legislature and the Governor in January, 2004.

Third, the Governor has supported the department in undertaking a long-range planning process that will develop a vision, strategy, and goals, with an eye to better positioning it for the future. A review of funding needs and sources will be part of this plan.

Groundfish

The breakout sessions at the conference indicate that there is considerable concern in three areas: 1) the short-term impacts of federal regulations (Amendment 13) on Maine’s groundfish industry; 2) a need and desire to work on the long-term root cause of the problem, which is to build more flexibility and balance into the Sustainable Fisheries Act; and 3) the competitive disadvantages of fishing out of Maine ports (lack of healthcare benefits, distance to fishing grounds, sales tax on fuel, unemployment compensation, and landing of dragged lobsters were all mentioned as disadvantages).

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Recommendation: *Create the best possible outcomes for Maine fishermen from Amendment 13 – The Department of Marine Resources should continue*

³ Wilson, James. *Maine’s Fisheries*. University of Maine, Orono, ME, October 2003.

⁴ Apollonio, Spencer. *Aquaculture in Maine: A Policy for a Sustainable Industry*. Boothbay, ME, October 2003.

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its effort to work within the federal Council system to create the best possible outcomes from Amendment 13 for Maine fishermen.

40 **Recommendation:** Support the Groundfish Task Force – Where appropriate, adopt its findings and recommendations.

41 **Recommendation:** Restore the balance between conservation and resource use in the Sustainable Fisheries Act – Support the department’s effort to work with Maine’s Congressional Delegation and other New England states to restore a balance between conservation and resource use in the Sustainable Fisheries Act.

Consensus Building and DMR Long-range Planning Process

In the breakout sessions, there was support for consensus building both within and across industry sectors. There was also support for the Department of Marine Resources to undertake a long-range planning process. These two topics were given the highest priority in a straw poll taken at the conference. Participants also expressed:

- Concern that there hasn’t been adequate funding for the Department of Marine Resources
- A need to take a more coordinated approach to fisheries management that would look at fisheries management based on ecosystem principles rather than a single species approach.
- A need for greater public awareness of fisheries issues, noting that awareness needs to go beyond just those who are participating in fisheries
- A need to build consensus within and across sectors, particularly to address issues that affect more than one sector.
- Broad support for initiating a recreational fishing license, revenues from which would support public water access, research, and law enforcement

42 **Recommendation:** Facilitate consensus-building within the recreational and commercial fishing communities – The Department of Marine Resources should undertake a new role as a facilitator to build consensus within the recreational and commercial fishing communities. The department should work together with the groundfish and aquaculture task forces and other fishing industry groups to develop a common vision for Maine’s marine resources.

43 **Recommendation:** Direct the Department of Marine Resource to undertake a long-range planning process – The Department of Marine Resources should undertake a long-range planning process, with industry input, to review the department’s mission, goals, and objectives to direct the department’s resources strategically. The process should be consistent with efforts already underway to create sustainable groundfish, aquaculture, and recreational fishing industries in Maine. It should also include a review of funding sources and consideration of a recreational fishing license.

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- by the state. In addition, there was a desire to develop a regulatory and economic framework that
- sustains the coastal environment, provides economic opportunity, and addresses legitimate conflict.
- The Aquaculture Task Force has tackled these topics and has made its final recommendations to the Governor and the Legislature. Their six-month process and resulting report, which included extensive public input, will help inform public policy discussions around marine aquaculture issues in Maine. The report provides a vision for marine aquaculture in Maine and proposes a series of principles to guide the development of aquaculture in the future. The vision and principles will be considered by the Legislature in the Second Regular Session of the 121st Legislature.

- 51 **Recommendation:** Support the vision and principles for aquaculture established by the Aquaculture Task Force – Support the Aquaculture Task Force’s stated vision and principles that a working waterfront is critical to Maine’s coastal Future and that marine aquaculture will be a part of Maine’s working waterfront.
- 52 **Recommendation:** Carefully review and, if appropriate, adopt the Aquaculture Task Force’s recommendations – 95 recommendations address bay management, leasing processes, impacts of aquaculture on other uses, ecological health, and information, research, and industry promotion. The Aquaculture Task Force, and its associated stakeholder advisory panel, was charged with determining how to balance the range of potential uses of state waters and with planning for the growth of marine aquaculture.

Public Education and Investment in Aquaculture

Conference participants cited a need to increase and improve public information about aquaculture. Aquaculture is a complex and controversial topic with consequences on the local level. Representatives of local communities voice concerns about needing to be better informed about aquaculture developments, the regulatory process, environmental monitoring, and so forth. Conference participants also commented on the need for increasing technical support for aquaculture entrepreneurs

- 53 **Recommendation:** Develop and implement an aquaculture public information plan – The Department of Marine Resource should convene aquaculture agencies and organizations to develop a public information plan. To accomplish this, they should engage the Maine Office of Tourism and Maine Tourism Commission, State Planning Office, and Working Waterfront Coalition in developing an information campaign describing the many benefits of Maine’s multi-use waterfronts and the importance of the industry to Maine’s economy. Encourage the Maine Congressional Delegation to secure funds for public information about aquaculture.
- 54 **Recommendation:** Encourage other state agencies to support aquaculture:(a) The Department of Economic and Community Development should include aquaculture in its ad campaigns and provide outreach to aquaculture companies about available business development programs; (b) The Department of Agriculture should include aquaculture in its promotional programs; and (c) The Maine Technology Institute should allocate some of their grant funds to technology transfer activities that would allow aquaculturists to travel and learn from aquaculture being done in other jurisdictions.

Forestry

Maine's forest resource and forest-based industry have entered this century to find new and compelling dynamics at work. Changes in the corporate world and financial markets, seemingly insatiable demands for land in southern Maine, and surging foreign competition create new challenges and opportunities. Our traditional views about the Maine woods and the industry, and our established policies are not capable of coping with these new challenges and realizing these opportunities. An entire industry is being re-created before our eyes, and we do not have the operator's manual.⁵

The Blaine House Conference generated an array of positive ideas to benefit the long-term health and vitality of the forest industry in Maine. To ensure that the hard work and creativity captured by the conference will be carried forward, we suggest five specific vehicles through which the ideas and recommendations can be refined and implemented.

First, the Governor has called for the creation of an Advisory Council on the Sustainability of the Forest Products Industry in Maine to address the circumstances confronting the industry and the economic and social communities closely tied to it; and to develop policy recommendations to support and enhance the long-term sustainability of the industry. The Council will submit recommendations to the Governor in August, 2004.

Second, the Governor has presented the "Maine Woods Legacy," a policy initiative to conserve the cultural, economic, ecological, and recreational values in Maine's North Woods. This provides a policy context for a number of concerns and ideas generated at the conference.

Third, the Maine Forest Service is initiating the Future Forest Economy Project, to assess the opportunities and challenges facing Maine's wood-using industries over the next 20 years. More specifically, this effort will identify: what is needed to maintain Maine's existing wood-using industries; what are the growth opportunities in existing and potential new wood-using industries; and what Maine state government and the industry itself might do to improve the prospects for the forest products industry. The results of this analysis will help inform the work of the Advisory Council on the Sustainability of the Forest Products Industry in Maine and is due to be completed in summer 2004.

Fourth, the Maine Tourism Commission recently created a standing Natural Resources Committee, consisting of representatives from throughout the tourism industry, key state natural resource agencies, private landowners, and a number of independent stakeholders. The committee will look at the relationship between the tourism industry and the use and protection of Maine's forest resources.

Fifth, increasing certification of Maine's forest lands and green purchasing by the state became the centerpiece of Maine's Forest Certification Initiative, announced in July 2003, with a goal of 10 million acres of certified forest by 2007. This pioneering partnership between the state of Maine and the forest products industry, landowners, and workers will bring prominence to the high quality of Maine-made products. The Department of Conservation is hosting an Advisory Committee to develop ideas to expand the certification initiative. In early 2003, the Maine House and Senate passed a Joint Resolution calling for mills to procure green-certified fiber and to track these acquisitions.

This said, there are ten major areas that emerged from Blaine House Conference to benefit the health and vitality of the forest industry in Maine, as follows:

Logging Capacity and Forest Industry Infrastructure

⁵ Irland, Lloyd. *This Evergreen Empire: Maine's Forest Resources and Industries in a New Century*. The Irland Group: Wayne, ME, October 2003.

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Products Industry in Maine should examine the state's tax policy and regulatory framework to identify factors that impede capital investment in new equipment and technology, including financing programs, environmental regulations, and tax policies.

59 **Recommendation:** *Analyze how to make Maine's forest products industry more competitive – The Future Forest Economy Project should identify specific steps to create, sustain, or enhance growth opportunities, including identifying realistic recommendations for policy and program changes where existing policies and programs appear to hinder the state's goal of having the most robust forest products industry possible.*

60 **Recommendation:** *Determine the attitudes of Maine citizens regarding the forest products industry – The Future Forest Economy Project should determine the attitudes of Maine citizens regarding the forest products industry, their expectations and desires regarding its future, and attitudes regarding measures which might be taken to enhance the industry.*

Connections between Managed Forests and Outdoor Recreation and Tourism

An important theme that emerged before and during the conference involved enhancing the connections between managed forests and outdoor recreation and tourism. Some of the forestry sector groups highlighted this concept.

61 **Recommendation:** *Develop partnerships between managed forests and tourism and outdoor recreation – The Governor's Advisory Council on the Sustainability of the Forest Products Industry in Maine should examine ways to develop creative partnerships between managed forests and outdoor recreation/tourism. The Department of Conservation should work with the Departments of Economic and Community Development and Inland Fisheries and Wildlife in developing a long-term plan for linking tourism and outdoor recreation with Maine's green forest and forest products industry.*

62 **Recommendation:** *Replenish the Land for Maine's Future program – The Land for Maine's Future (LMF) Program has been successful in providing funding for forest conservation easements to help conserve large tracts of forest land that are available as a sustainable, long-term source of wood supply. Nearly 250,000 acres of working forest easements are either conserved or are pending, and additional working forest easements are proposed that could ensure tens of thousands of additional acres remain available for forest management. A land bond to replenish LMF in 2004 would continue this effective strategy that has widespread public support.*

Branding and Certification

Many of the forestry sector groups endorsed certification of woodlands in Maine as a means of capturing a larger market share and attracting more investment to a state "branded" by its commitment to sustainable forestry. Many participants viewed branding Maine's natural resource-based industries as a positive effort and called for a combined effort across natural resource sectors.

63 **Recommendation:** *Use the state's Forest Certification Initiative to enhance marketing of Maine's forest products – The Department of Conservation should continue to implement Maine's Forest Certification Initiative and ideas*

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emerging from the Governor’s Certification Advisory Committee and discuss the ideas emerging from that effort with The Governor’s Advisory Council on the Sustainability of the Forest Products Industry in Maine.

Competitive Advantages of Maine’s Wood Species and Characteristics

Many of the forestry groups endorsed pursuing wood by-product utilization and expanding research and development focused on the unique attributes and competitive advantages of Maine’s wood species and characteristics. On a long-term basis, emerging markets for carbon sequestration may provide opportunities for forest landowners.

- 64 **Recommendation:** *Focus on the unique attributes and competitive advantages of Maine’s wood species to grow this industry – The Future Forest Economy Project will identify steps to create, sustain, or enhance growth opportunities for existing and potential new wood-using industries and existing and potential products, product areas, and companies that offer the best opportunities for Maine to encourage as part of a forest industry retention and development strategy. The results of this analysis should be provided to the Governor’s Advisory Council on the Sustainability of the Forest Products Industry.*
- 65 **Recommendation:** *Evaluate the potential of carbon trading – The Department of Environmental Protection has convened the “Maine Greenhouse Gas Initiative Stakeholder Advisory Group” to investigate the role that emerging markets for carbon sequestration might play in enhancing the returns to Maine landowners and improving forest management in Maine. The Maine Forest Service has applied for federal funding to inform the work of this group.*

Sharing Relevant Information

Many of the conference discussions heralded the significance of sharing information better within the industry. Information to connect investors with business was viewed as important. This also included reaching out to the next generation with good educational and professional programs and tracking progress towards a sustainable vision.

- 66 **Recommendation:** *Create a “Market Development Alliance” between forest products associations, the University, the Maine Technology Institute, and the Departments of Conservation and Economic and Community Development to focus the industry on entrepreneurship and develop outreach and education programs and mentoring opportunities.*
- 67 **Recommendation:** *Track forest industry information needs – The Department of Conservation should obtain and update relevant information about the forestry industry, establish benchmarks to monitor its health and vitality.*

Trade Policy

A trade policy that provides for a fair and competitive world market is key to maintaining Maine’s manufacturing base, encouraging re-investment in existing manufacturing facilities, and attracting new businesses to Maine. Conference participants cited current trade policies combined with the high value of the US dollar as factors contributing to recent declines in manufacturing. While trade policy is a federal government responsibility, Maine should make its voice heard in Washington.

Recommendation: *Examine trade policies that contribute to declines in forest manufacturing – The Governor’s Advisory Council on the Sustainability of the Forest Products Industry in Maine should examine trade policy issues and make recommendations to the state’s Congressional delegation.*

Tourism and Outdoor Recreation

Tourism is important to the economy of every Maine region. It directly generates nearly seven percent of Maine’s gross state product. With over 10 percent of Maine’s jobs, it is also the state’s largest employer. Tourism’s economic complexity is reflected in the fact that it is not a single, well-defined industry, but rather thousands of diverse businesses, from restaurants to fishing guides and gas stations that derive some or all of their revenues from leisure travelers.

All Maine tourism depends directly or indirectly on the state’s natural beauty and attractions, ranging from clear mountain lakes to fresh-caught lobsters. Tourism will flourish in the future only if this rich and multi-faceted natural endowment is sustained. Tourism can play an important part in preserving, protecting, and restoring Maine’s natural resources and the extractive industries that depend upon them. In turn, agriculture, aquaculture, fishing, and forestry supply tourism products and shape the appealing settings that travelers seek: active fishing villages, coastal vistas, open farmland and orchards, and a vast forest domain with all its mountains, lakes, and wildlife habitat.

Looking beyond tourism’s current contributions to Maine’s economy, rural community vitality, and other resource-based industries, many segments of the tourism economy have potential for sustainable growth *if* they are effectively planned, managed, and promoted.⁶

Higher Education, Training, Research and Small Business Extension

The tourism and recreation breakout groups at the conference underscored the importance of foundational investments for future economic development of Maine’s tourism and recreation economy. The following observations were particularly compelling:

- Several recreation and hospitality programs already exist within the University and Community College Systems. We should facilitate the creation of a comprehensive, statewide tourism education, training, research, and extension program. The broad program should also extend to high school and vocational school curricula, as well the state’s private, higher educational institutions.
- The establishment of high-level tourism and recreation curricular should be designed to dovetail with future staffing needs for university research and extension activities.
- A core feature of all program offerings should be an emphasis on tourism’s potential contribution to Maine’s environmental, economic, and community sustainability.
- Involving tourism trade associations in curriculum development and internship programs will strengthen the connection between formal education and emerging career opportunities in Maine. Improving graduates’ chances for career success in an expanding segment of Maine’s service economy will also help to stem the state’s “brain drain.”

Recommendation: *Convene a development committee to develop degree, research, and extension programs in Hospitality and Recreation – The State Planning Office should work with the University of Maine and Maine*

⁶ Vail, David. *Sustaining Nature-Based Tourism in Vacationland*. Bowdoin College: Brunswick, ME, October 2003.

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Community College System to convene a committee of representatives from the University and Community College systems, the Maine Office of Tourism, the Maine Tourism Commission, and key representatives of tourism and recreational business organizations, to develop the elements and requirements of associate's, bachelor's, and professional degrees in the hospitality and recreation field. In addition, a high-level center of ongoing basic and applied tourism research with a related extension program should be established within the University System. The research and extension program will provide market and product information and technical assistance to Maine's tourism industry. The degree, research, and extension programs will also seek to enhance economic linkages between the tourism industry and fisheries, aquaculture, agriculture, and forestry, as well as with the creative economy.

Clarify and Strengthen State Agency Roles and Responsibilities

The breakout groups responded positively to the recommendation that there be greater interagency collaboration in tourism/recreation planning and management because, unlike agriculture, forestry, and marine resources, there is no single government agency dedicated to tourism development and management. The following observations were of particular interest:

- We must move boldly beyond the limited role of marketing and promoting Maine as a travel destination. We need to develop and deliver a range of incentives and support services to the businesses, communities, and tourism regions that seek to grow tourism and recreation.
- Many state government agencies have key roles to play, both in supporting and coordinating tourism and recreation development. At present, the message is not always consistent across agency lines, and is at times seen as contradictory. This creates a degree of mistrust or confusion among private interests that frustrates economic development efforts.
- Tourism development, particularly in the Northern forest and Downeast regions, would be enhanced if there were an overarching, recreational management and promotion plan for Maine's evolving mix of public, private, and trust lands. Businesses, communities, and regions could then plan and invest with greater confidence that Maine will continue to offer an array of recreational opportunities unrivalled in the Northeast.
- It is necessary to define a clear chain of leadership and a clear coordination structure among the state agencies involved in promoting sustainable tourism and recreation development. The lead agency will require a substantial broadening of its staff expertise and overall capacities, if Maine is to achieve sustainable tourism and recreational development.
- There are numerous incentive opportunities and opportunity zones for other industry development interests; similar offerings should be made available to tourism businesses if expansion into the underdeveloped areas of the state is to be realized.

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Recommendation: *Broaden the Department of Economic and Community Development tourism capabilities: (a) The Department of Economic and Community Development should assess its present capacity to deliver technical assistance and business development support for tourism and recreation, as it relates to businesses, communities and tourism regions (this will include an evaluation of business development and tourism staffing and resources, both in-house and in associated economic development agencies and councils of government); (b) The department's statutory mandate should be amended to specifically include tourism planning and development.*

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Recommendation: *Improve tourism and recreation business incentives: (a) The Department of Economic and Community Development should evaluate the effectiveness of its business support and economic development offerings in meeting tourism and recreation business needs, and promoting creation of quality jobs in tourism and recreation (this would include developing targeted incentives using the Pine Tree Zones model).*

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Recommendation: *Coordinate recreational land-use management: (a) The State Planning Office should convene a taskforce of public, private, and land trust representatives (including relevant state land management agencies such as the Department of Inland Fisheries and Wildlife and the Bureau of Parks and Lands) to craft a comprehensive inventory of present and currently proposed protected lands. (b) The Department of Conservation should convene a representative body of state officials, private landowners, conservationists, and recreational interests to formulate a set of guidelines for sustainable, multiple-use land management. These should be made relevant to both individual ownerships and larger landscapes, and take into consideration landowners' rights, industry needs, recreation industry interests, public access goals, and long term resource stewardship requirements. A key objective is to identify potential "recreation destination clusters." (c) Ensure passage of a new Land for Maine's Future bond, with an emphasis on maximizing recreational complementarities between existing protected lands and proposed new acquisition and easements.*

Implement Sustainable Tourism Economic Development Planning

All breakout groups agreed that we must improve our understanding of the capacity for sustainable tourism and recreation growth, in both underdeveloped and highly developed Maine regions and localities. Of particular importance are the following observations:

- Assessment of the resource base for creating new tourism opportunities and the infrastructure to realize them should be broad-based including: transportation, water and waste systems, public service needs, lodging, food, cultural and heritage resources, agri-tourism opportunities, and hunting and fishing potential.
- Successful tourism planning requires recognition of the complex interdependencies, both complementary and conflicting, between tourism and other natural resource-based industries.
- Regional tourism organizations' capacity to support consistent and effective marketing needs to be assessed.
- Regional and community tourism planners should have access to information about best tourism business practices and a comprehensive base of research related to sustainable tourism and economic growth opportunities.
- Tourism planning processes should involve not only communities, regions, and businesses, but also representatives from the state agencies that develop and direct programs supporting plan implementation.
- A consideration in choosing among tourism opportunities is whether high value or high volume will contribute most to development that is environmentally and socially sustainable.
- Any tourism planning process should recognize the role of individual communities in determining the appropriateness of particular types of tourism and recreation growth.

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Recommendation: Establish processes to bring sustainable development criteria into tourism planning: (a) The State Planning Office, in cooperation with the Department of Economic and Community Development and the Maine Tourism Commission's Natural Resources Committee, should develop a planning matrix or framework to facilitate evaluation of various tourism development opportunities in terms of their impact on environmental and social carrying capacity; the planning framework should be useful to communities and regions as they develop their strategies for tourism and recreation development; and (b) Maine's economic development districts, councils of government, and regional tourism districts should evaluate proposed tourism initiatives in terms of the framework and criteria.

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Recommendation: Increase the state's capacity to provide technical assistance to municipalities seeking tourism industry growth – Assistance should be provided in form of tools to assess industry economic, social, and environmental benefits and costs, to determine carrying capacity limits, and to encourage industry growth accordingly. The technical assistance provided should respect the needs and interests of the local municipality. With additional resources, this could be performed by the State Planning Office.

Comprehensive Branding Campaign

The recommendation to establish an overarching branding theme for all of Maine's natural resource sectors stimulated a lively dialogue. While there is a general consensus that a branding message with clear meaning and powerful impact in the marketplace would be immensely valuable, attaining a single common message needs more discussion. The following observations were particularly insightful:

- States such as Vermont have had some success in developing a unified branding campaign. They emphasize and monitor development of a wide range of high quality tourism and recreation services to back up the branding effort.
- Maine tourism already has branding in place, as a result of the Office of Tourism's and Department of Agriculture's past efforts. Any new branding effort should capitalize on that.
- The branding message must be sufficiently flexible and comprehensive to represent all sectoral and regional interests, as well as all tourist seasons.
- A comprehensive branding effort will require coordination and consolidation across several state agencies.
- The agencies' current promotional resources are probably not sufficient to accomplish such a branding effort.

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Recommendation: Explore a comprehensive branding campaign: (a) The Department of Economic and Community Development should establish an interagency task force including representatives from the Departments of Agriculture, Conservation, Inland Fisheries and Wildlife, Marine Resources, and Transportation, and the Historic Preservation and Maine Arts Commissions to explore the feasibility of a unified branding program; and (b) If feasibility is established, the department should oversee the process of developing and implementing a marketing plan with the branding program.

Appendices

Conference Speeches

Appendix A: Welcome and Opening Remarks

By Governor John E. Baldacci

First, I want to thank all of you for being here today. The size of the turn-out alone testifies to the importance of natural-resource based industries to Maine and to our shared concern for their future.

And I want to thank everyone who contributed time, energy, and money to make this conference possible.

- Dick Barringer, Dick Davies, and the rest of the planning committee worked hard to organize this event.
- The authors of the papers did an excellent job stimulating new thought and discussion.
- I know our natural resource departments spent days reaching out to many of you for comments.
- Finally, I want to thank the sponsors of this event for their contributions. Without their support, we could not have brought all of you together.

And together is where we want to be when it comes to our natural resource-based industries—not just today, but after we leave here.

- When Maine became a state almost 200 years ago, 80% of our workers were employed in fishing, farming, or forestry. Today, the numbers aren't nearly the same—but the fundamental importance of natural resource businesses to our economy and our community character remains.
- Our large tourist industry is vitally linked to the land, water, habitat, and animal life that farming, fishing, and forestry help preserve. And natural resource-based industries are key to economic development in all of rural Maine.
- Natural resource businesses are also important to Maine's emerging retirement industry; to encouraging young people to make our state their home; and to entrepreneurs and researchers who want to work in a place with a high quality of life.
- And we wouldn't be Maine without the values our farmers, fishermen, and forest workers represent. Their values of hard work, resilience, and creativity are part of the character of Maine people.

We are all here today to roll up our sleeves, work hard, and be creative. You know better than I that for our natural resource-based industries to survive, we need to help move them into the future. And we want these businesses to do more than survive—we want them to thrive.

- For these industries to thrive, we must find new ways to protect and promote them. We must find new ways to add value and do all we can to put them on a sustainable path.

Your efforts today are just part of the beginning of this challenge. In my inaugural speech, I set forth the goal of this conference. At a summit in March, almost 100 of you began to develop the vision for this event. Today takes us another step along the way.

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- Maine people are depending on us—in government and the private sector—to come up with new strategies and investments that will build the economic vitality of our natural-resource based industries.

Your industries are under tremendous pressure—from global competition, from biological calamities, from changes in government policy. For many of you, I know these changes have added stresses to your need to simply make a living.

Amendment 13 and its impact on groundfishing is just the most recent example of a shock to Maine's oldest industries. I'm looking to the fishing community here today, as I'm looking to all the natural resource sectors present, to provide me with consensus on how we move ahead.

Together, I hope we will get through the pressures of these times so that we can continue in your industries to take advantage of two of Maine's greatest assets—our people and our natural resources.

For that is how we will bring greater economic growth to all regions of Maine—by developing our natural resources wisely, by preserving our cultural heritage, and by investing in our people. We want businesses and workers in Maine who are part of the well-paying information and service economies, and we want industries that help us combat sprawl and remain the stewards of the land and waters that Maine people have always been.

So today is part of the beginning. Government by itself can't bring our natural resource-based industries into a profitable future. We need the innovation and investment of the private sector to push us along, to show those of us in government how best we can help.

And we all need to acknowledge that the luxury of any “us versus them” thinking is gone for good when it comes to the Maine economy.

- We are all fortunate to be citizens of this beautiful state. Together, we need to organize ourselves—in business and in government—to be creative, to take advantage of technologies, to eliminate inefficiencies, to take risks to move into the future.
- During this afternoon's session you'll be looking at issues that cut across your sectors. I have found—in the restaurant business and in my public career—that teamwork and finding a way to tackle several problems with one solution is a good way to go.

Finally, there will be more work to do after today's conference to meet our goal of sustainable agriculture, aquaculture, fishing, forestry, and tourism. There will be weeks, months, and years of effort ahead. I promise to do my part and I ask all of you to stay engaged.

But first, give us your best thoughts and advice today as you respond to the draft recommendations from our departments. And thank you all again for giving us your time to help put Maine's natural resource-based industries on a path to prosperity in the 21st century world.

I look forward to the results of your work today, and to hearing from you this afternoon. We'll see how far you've gotten and how far we have to go together.

Thank you.

Appendix B: Maine's Natural Resource Industries in a Post Industrial World

By Dr. Charles S. Colgan
Professor of Public Policy and Management
Associate Director, Center for Business and Economic Research
Muskie School of Public Service
University of Southern Maine

Maine's natural resource industries are in trouble. This is not news. Particularly in the manufacturing industries, Maine has been steadily losing jobs for two decades. There have been some bright spots, including parts of the fishing industry, but even these are tarnished by the prospects of drastic restrictions on aquaculture and the groundfishing sector. Even our largest natural resource industry, tourism, is lagging.

As we struggle to deal with the problems facing these industries, we need to be clear about what the sources of the challenges are. This morning I would like to outline what I think those challenges are and suggest some strategies to meet them as a way to help organize what you will the rest of today.

There have been no shortages of diagnoses for the problems of the natural resource industries, and no shortages of solutions proposed. Over the last twenty-five years, I am reasonably sure I have heard them all. All of them can be subsumed within two broad categories: competitiveness and resource management.

All of the firms in the natural resource industries operate in highly competitive markets. No firms dominate their market or even a share of the markets. Firms cannot raise the prices for the products because someone is always there to sell at a lower price, which in turn means relentless pressure to control costs. Over the last decade, competition has increasingly come from imports as transportation and trade policy changes over the last three decades have opened America, the richest and most stable market, to the world.

At the same time, the resource base on which we depend has become more and more fragile. Our forests remain the dominant feature of the Maine landscape, but the intensity of use for both extractive and passive uses has increased at enormous rates. Our ocean resources are under even more pressure, and we have still not discovered reliable ways to equate the pressure of use with natural reproductive systems. Our agriculture land base and our famous three thousand mile coastline are under intense competition for many uses.

It is important to understand that these problems face forest products, fisheries, agriculture, and tourism throughout the United States. Maine's natural resource industries are part of America's natural resource industries, and we need to start by understanding where those industries are, at least in broad outline. Note that the data I will show is highly aggregate and may be somewhat distorted by trends in products that Maine does not produce but the broad picture is applicable throughout the resource industries nonetheless.

Starting with forest products, the softwood lumber industry has been part of a remarkable housing boom over the last several years, driven by a rapidly rising economy and a period of historically low interest rates. Demand for softwood lumber has been more or less steadily rising for nearly a decade, despite the downturn in the overall economy over the past three years. But, as the supply picture makes clear, most of the growth in softwood lumber demand has been met by imports. The export market for softwood lumber has been very small.

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With pulp and paper, a somewhat similar story emerges. According to Jim McNutt of the Center for Business and Paper Industry Studies at Georgia Tech, demand for printing and writing papers, the grades that Maine primarily produces, took a big hit in the wake of the collapse of the tech boom. But demand is rebounding and should see steady growth over the next few years.

There is, however, stiff competition from abroad to meet this demand. There is also a substantial gap between expected demand and both capacity to produce paper and the amount that will be shipped from North American mills. That gap reflects the chronic over-capacity in the pulp and paper industry and the substantially increased importance of imports in the North American market. Meanwhile, imports of all grades of paper have more than tripled in the last decade, particularly after 1996.

Turning to fisheries, demand continues to rise for seafood, reinforcing the old aphorism that every fish can find a home. Like forest products, much of that demand is now being met by imports as domestic landings fall. Imports have been the key to meeting America's increasing appetite for seafood, although the problems with sustainable harvests plaguing domestic fisheries are now spreading to other world fisheries such as the Chilean Sea Bass.

Unlike softwood lumber, exports remain a big part of the U.S. seafood industry. Maine plays an important role thorough major lobster exporting; much of the growth in lobster catch over the last five years has gone to the export market.

Finally, looking at potatoes, overall production in the U.S. has remained relatively steady over the last decade, with little in the way of overall market growth or domestic supply. Imports and exports remain a relatively small part of the overall picture. However, processed potato trade has been steadily growing in both imports and exports. Until recently the U.S. was exporting more processed potatoes than it was importing, but this trend reversed in the last few years. Fresh or table stock potato trade has been relatively small in the national picture, though it remains the principal issue for many Maine growers.

Two major conclusions can be drawn from this analysis of national and international markets. First, the overall markets for Maine's natural resource products are stable or growing, though some are more influenced by business cycle conditions than others. Second, competition in all of the markets is increasing primarily from imports. The most important effect of this competition is to limit or eliminate any ability to influence the prices paid for natural resource products. This can be seen most clearly in the case of paper and fisheries, but it applies equally to softwood lumber, potatoes, and other products.

Adjusted for inflation (using the GDP implicit price deflator), the real value of U.S. fisheries landings has declined substantially over the same period even as demand was growing. Real values were steady in the past decade, but began another down tick early in this decade.

A similar picture is apparent in the pricing of printing and writing papers over the past decade, according to Jim McNutt at Georgia Tech. There has been overall stability in nominal prices, with a brief up tick as the economy was emerging from the last recession, but real prices have steadily declined to levels that represent historic lows.

The relentless downward pressure on prices means similar pressure must be exerted on costs. I will not belabor all the reasons why Maine is a high cost state to do business in, though I will return to some of them when I talk about strategies. Rather, let me just illustrate the point with some data from the paper industry. As I mentioned, Maine produces primarily printing and writing papers. One of our key products is directory paper, used mostly in phone books. This graphic shows data from the Georgia Tech data base on the costs of production at a Maine mill making directory paper, the industry average for such mills, and the lowest cost producer in their data base. Maine's cost gap is significant, especially in labor.

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Maine has survived its high cost structure for many years by having exceptional productivity. But, as recent events throughout the forest products industry have shown, productivity can only carry you so far in a highly competitive price environment.

The results of all these trends are in some ways not surprising. The natural resource industries are becoming a smaller and smaller part of both the U.S. and Maine economies. But the problem is worse here in Maine because we are not only losing in absolute terms, we are losing relative to the rest of the U.S. Even in the one natural resource industry where we have been growing, tourism and recreation, we are losing market share.

For purposes of illustrating these conclusions, I will define the natural resource sector of the Maine and U.S. economy as comprising the lumber and wood products, paper and allied products, food products, farming, agriculture, forestry and fisheries services, and hotels and lodging places. I will use hotels as a marker for tourism.

It is well known that employment in these industries has dropped. From 1987 to 2000, these industries declined from 14.5% to 12.6% of wage and salary employment in Maine. What is even more shocking is a drop from 22% of gross state product in 1987 to under 9% in 2001. This latter figure is heavily influenced by the recession of that year, but even with a cyclic rebound, the proportion of the state's economic output comprised of these industries will have dropped in half in about 15 years.

When broken down by the individual industries, it is clear that the overwhelming reason for the drop is a fall in the contribution of forest products to the economy. Pulp and paper and lumber and wood both fell by 50% or more. Other sectors, including hotels, also dropped as a proportion of the economy. Only farming slightly increased, and farming's contribution to the economy is notoriously volatile.

The growth patterns in the natural resource industries in Maine are disturbingly different from those of the U.S. Over 1987-2000, Maine's losses in both jobs and output in the forest products industry were not mirrored in the U.S. Indeed, output in pulp and paper shows fairly health growth. Only in employment in agriculture, forestry, and fishing services did Maine grow faster than the U.S., but we still not match the U.S. in output growth for this sector.

Even in hotels, we lagged the U.S. in employment and significantly lagged in output. In tourism, Maine has one world-class attraction - the coast. Yet even with our unique resources in this area, we are losing out. A comparison of employment and output in the ocean-related tourism and recreation sector as part of the U.S. ocean economy shows that Maine's coastal tourism is growing, but still lagging the U.S. in both employment and output growth.

To repeat: Maine is not only losing employment and output; it is losing market share even where we are stable or growing. This would be a serious challenge under the best of conditions. Unfortunately, we have to meet these challenges under far from ideal conditions in the resource base on which everything else depends. Three factors dominate the issue of resource management:

- We are right at, or beyond, sustainable harvest levels from the forests and oceans, and we do not have the knowledge that will get us there.
- The land base is shifting rapidly from resource to urban uses.
- We have profoundly conflicting visions of how Maine's natural resources should be used.

The basic principle that one should not exploit a renewable resource beyond that point at which the resource can renew itself through its biological potential is hardly debatable. Agreeing on that as a goal is easy. Implementing it is hard. What is the level at which biological potential is irreversibly damaged? What level of resource use is, in fact, associated with that biological level? How does natural variation in the environment, which occurs over time scales from daily to decadal, influence the point of maximum biological potential? Is today's answer different from yesterday's, or tomorrow's?

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If we have to adjust to “sustainable” harvest levels, who will have to make what adjustments in their economic lives?

The truth is we do not have very good answers to any of these questions, and we do not have any answers at all to some of them. Yet we must behave as if we do have the answers. Over the last thirty years more attention is being paid to finding answers to these questions than ever before, and while we have learned some things, we still operate in an environment of profound uncertainty and risk.

Another source of concern is the changing ownership of land. By acreage, much, maybe most, of Maine has changed hands over the past decade as the integrated forest products companies have, with some exceptions, have decided they would rather be un-integrated forest products companies. Agricultural land continues to be sold for development in what my colleague Mark Lapping calls the “contested countryside”. And on the coast, a combination of tax reform, which gave further preferences to real estate holding, and the shift of wealth out of stocks and into real estate as the dot.com boom went bust, has greatly increased the demand for coastal real estate.

It is easy to overstate this as a problem. Vibrant markets and rising values are not a sign of economic weakness. Imagine for a moment how we would interpret real estate prices falling throughout Maine at the rates they have actually been rising. But these trends add to the prevailing climate of uncertainty in which the industries must operate.

Finally, there are the profoundly different visions about Maine’s natural resources. The extended acrimony over clear cutting, the fights over aquaculture leases and other waterfront development, and local battles over preserving or developing open space and farm land are all examples of different ways of interpreting the “way life should be” in Maine

In an increasingly urban society, we see our woods, waters, and lands as that characteristic of Maine we most want to see kept as both a visual and experiential refuge from the urban-suburban life. For others, the “way life should be” is the opportunity to work the land, the woods, and the waters to make a living in the outdoors far from offices and city streets. These differing visions of the resource base are adding one more burden to the resource industries who find they must not only fight their competitors but their neighbors as well.

All of these factors- the pressures from competition and on the resource base itself add up to the serious situation facing every one of Maine’s natural resource industries today. The question now is what are we going to do about them? In today’s sessions you will hear a lot of terrific ideas about how to respond to these challenges, and you will come away wondering which are the most important, which need to be done first. I suggest no specific priorities, but I do suggest strategic priorities. Everything we do for the natural resource industries must be aimed at increasing our competitiveness and managing the resource base. To do that I suggest the following “strategic themes:”

1. Control costs - the single most important issue facing the industries
2. Add services
3. Find new customers
4. Build on cluster strengths
5. Create resource management communities.

1. Control costs. The biggest challenge we have is that cost control is our major issue, but costs influenced by government are a relatively small part of the cost equation. But we need to do what we can, including stabilizing the BETR program, addressing workers compensation costs, and improving transportation.

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2. Add Services. The post-industrial economy is the service economy. If we can't beat them, it is time to join them. Our goods industries need to add values by adding services and our service industries need to add more services. Delivery, packaging, transportation, the application of information technologies to improve customer service and implement "mass customization" are strategies that all firms can use to gain some pricing leverage.

3. Find new customers. To illustrate I have shown the top 25 exports from Maine in 2001. 13 of the top 25 are forest products or food products, together accounting for more than a third of exports by value, and substantially more by volume. Take out National Semiconductor's semiconductor exports, and these products account for nearly half of Maine's exports. Yet exports account for only half of Maine's economy compared with the U.S. Efforts to develop markets in neighboring Canada are a good start, but they should only be a start. There's a large world waiting out there. Of course, exports are not the only new customers we will have to find. We will have to find them in the U.S., particularly for the tourist industry, where we are in danger of being vacationland only by virtue of our license plates.

4. Build on Cluster Strengths. Much of the discussion about economic development today focuses on "clusters" of economic activity that give a state its economic strength. "Clusters" are usually used to describe places that rely on high tech industries like Silicon Valley. But they can just as easily describe the natural resource industries. Maine is one of the few states to designate its natural resource industries as clusters to be supported through its research and development programs. In an analysis I did two years ago, I identified four types of clusters in Maine based on the extent to which they exhibited the characteristics of a competitive cluster and their market growth. Those types included the "foundation" clusters of the natural resource industries, with high cluster strength but low growth. We need to build on the strong relationships among the dense array of firms, higher education institutions, and public agencies with expertise and knowledge of Maine's natural resources and resource industries. To put it simply, all of our efforts at supporting innovation in fields like information and biotechnology are aimed at creating what already exists in the resource industries.

5. Create Resource Management Communities. Finally, we have to develop radically new approaches to resource management. Our approach to resource management has become dominated by the characteristics of what Lester Thurow described twenty years ago in his book *The Zero-Sum Society*. In such a society a gain by anyone is seen as a loss for someone else, and all issues become "games of pure conflict." To get beyond the zero sum approach to resource management, we have to build resource management communities which are characterized by shared visions of the resources and their future, shared learning about what we know and don't know about the use of resources and their impacts, shared decision making processes in which a wide array of concerned people have meaningful roles, and finally a shared sense that whatever the outcome of such processes are that everyone has had to sacrifice something to get there. The vast majority of resource management decisions we face are, in reality, neither pure conflict nor "win-win" but require some sacrifice on the part of everyone. In creating such resource management communities we will actually be returning to a shared ethic and approach to conservation of our natural resources that Richard Judd at the University of Maine has shown grew up in the 19th century as industrialization was beginning to take hold of Maine's natural resources.

We should have no illusions about these strategies. They will take time to implement, and we are running desperately short of time. If you will permit a closing analogy from the resource I know best, the sea: We are caught on a lee shore with our sails aback and we are taking on water. Only the most determined actions will set us aright and afloat with any chance of reaching shore safely and prosperously. So let us set about it. There is not a moment to lose.

Appendix C: Towards a Greener Forest Products Industry

By David Refkin
President, TI Paperco, Inc.
Time, Inc.

Time Warner Company Overview

6 Divisions

- America Online
- Networks
 - HBO
 - CNN
 - TBS
 - And More
- Time Warner Cable
- Filmed Entertainment
 - Warner Brothers
 - New Line Cinema
- Music
- Publishing
 - Time Inc.

Time, Inc.

- World's largest magazine publisher
 - 24% of all US magazine advertising revenue
 - 55 domestic titles including four weeklies – TIME, People, Sports Illustrated, Entertainment Weekly
- Largest publisher in UK, IPC
 - 21% market share
 - 80 titles and 18 weeklies
- Book Publisher: Warner Books & Little Brown

Paper Purchasing

- Purchase over 600k tons of paper supporting nearly 200 end users
 - Primary grade light-weight coated groundwood
- Global purchaser of paper
 - 52 mills, 25 in US
 - Will purchase 190k tons from European mills
 - >90% of domestic use manufactured in North America
 - Buyer of Maine Paper Products since the 1930's

Paper Purchasing Strategy

- Close partnering relationships with our paper suppliers based on trust
 - Long-term mutual commitments
 - Product development
 - IT development and integration
 - papiNet
 - Unique pricing agreements to reduce volatility
 - Environmental Issues

Where We Have Been

- Greenpeace Campaign: 1991-1997

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- Environmental Defense Fund Paper Task Force “Purchasing and Using Environmentally Preferable Paper:” December 1995
 - Improvements in forestry practices
 - Chlorine Gas Eliminated
 - Product Reformulation
 - Source Reduction
 - Recycled Fiber
- Environmental performance incorporated into purchasing model
- As a major buyer of paper we DO have a responsibility to incorporate environmentalism and promote continuous improvement within our purchasing strategy

Challenges and Opportunities

- Forestry
 - Sustainable harvests
 - 3rd Party Certification
 - Endangered and Old Growth Forests
- Global Climate Change
 - Evidence is growing
 - Alaska +7° last 30 years
- Business and Government React
 - B.P. (Beyond Petroleum) % Shell focus on renewables and go public with new vision
 - Car makers increasing hybrid manufacturing
 - California, Maine, and other States support Greenhouse Gas reductions
- Resource Utilization
 - Number of unsold newsstand copies
 - Limited recycling of magazines delivered to the home
 - Use of recycled content
 - Use of non-renewable resources
 - Energy use/contribution to greenhouse gases
 - Direct mail
 - Design for recyclability
- Global Responsibility
 - Sustainable development
 - Social Justice
 - Fear of Globalization

Current Initiatives

- Six Major Initiatives
 1. Database of suppliers’ environmental performance and formalized environmental report card
 2. Magazine recycling initiative
 3. Global climate change initiative
 4. CSF – Certified Sustainable Forests
 5. WBCSD – World Business Council for Sustainable Development
 6. PWG – Paper Working Group

1. Environmental Performance Information

- Over 50 mills supplying Time Inc. paper
- Enables us to measure Environmental Performance
- Forestry:
 - Third Party Certification of Sustainable Forestry
 - Company Owned Lands
 - Pulp Suppliers Lands
 - Non-Industrial Lands
 - Types of Certification

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- Sustainable Forestry Initiative (SFI)
- Canadian Standards Association (CSA)
- Forestry Stewardship Council (FSC)
- Pan-European Forestry Certification (PEFC)

- Findings:

- *Industry lands largely certified; non-industrial lands in U.S. and Canada remain a major challenge*

- Energy:

- Types and amount of energy used on site
- Types and amount of energy used from outside providers (purchased power)

- Findings

- *Heavy Fossil Fuel use in U.S. and Scotland*
- *Use of bio-mass – enhances profile of kraft pulp mills*

- Pulping & Bleaching:

- Types and amount of pulp, integrated and purchased
- Bleaching sequences

- Findings

- *Enhanced bleaching sequences are approximately 60% of total kraft pulp used.*
- *Goal is to increase use of pulp from mills with enhanced bleaching sequences*

Magazine Recycling Initiative with International Paper

- Determine recycling rates for magazines through newsstand and subscription
 - Unsold newsstand recovery rate: 95%
 - Copies from home recovery rate: 17%
- Develop model recycling program with Time Inc., International Paper and National Recycling Coalition
 - Select Boston and one other community to re-energize and expand current OMG (old magazine and catalog paper) recycling
 - Serve as model for other municipalities
- Promote recycling in magazines with public service ads

Global Climate Change Study

- Stora Enso, Canfor, Home Depot, Time Inc., World Resource Institute (advisor) and Heinze Center for Science, Economics, and Environment (advisor)
- Measure carbon footprint of entire harvesting, pulping, paper manufacturing, and magazine production and distribution process
- Areas of focus:
 - Energy source at manufacturing facilities
 - Transportation
 - Tree Harvesting
- Next Steps:
 - Publish Report
 - Communicate appropriate public response
 - Improve carbon footprint of magazine production

Certified Sustainable Forests (CSF)

- Setting the Scene
 - Users of paper products have reacted to market campaigns by ENGO's
 - Wood users have developed stringent procurement policies in reaction to attacks
 - Commitments made to ENGO's often not fully understood
 - One certification scheme chosen as preferable
 - Inability to meet promises leads to further market campaigns
 - Forest Products industry put in a reactive stance
 - Public is unaware of improved forestry practices

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Towards a Greener Forest Products Industry

- Key Requirements
 - Save Dollars
 - Boston Recycling Program
 - Develop new creative certification schemes
 - Master Logger
 - Group Certification
 - Enhance Environmental Performance
 - Sustainable Forestry
 - Advanced Bleaching Sequences
 - Clean Energy
 - Sustainable Development
 - Economic & environmental win/wins do exist
 - Market forces encourage Environmental Preferable Paper
 - Leaders are rewarded
- *Example: Maine Forestry Certification Initiative*

Maine

- Maine Forest Product Industry in 1990's:
 - Limited capital investment
 - Machine closures
 - Aging non-competitive assets/global competition
 - 31% of all jobs (high paying) lost
- Millinocket (Great Northern) announces closure
- Old Town (G.P.) announces closure
- The answer: sustainable development
 - Strong Environment = Strong Economics
- With leadership from numerous parties:
 - International Paper
 - SWOAM
 - Trust to Conserve Northeast Forestlands
 - Master Logger Certification Program
 - State SFI Implementation Committee
 - State of Maine
 - Governor Baldacci

July 2, 2003 – Maine Forestry Certification Initiative is announced: 6.5 million to 10 million acres of certified forests by 2007

- Time Inc. strategy is to reward leaders
- In 2002 purchases from our Maine suppliers
 - IP - Bucksport/Androscoggin
 - Mead Westvaco - Rumford
 - Eastern Paper - Lincoln
- Total 90,000 tons purchased 2002
 - 12% of all purchases
- In 2003, Time Inc. purchased
 - 100,000 tons in Maine
 - 16% of all purchases
- A 33% increase on market share

Appendix D: Finding Common Solutions

By Laurie G. Lachance
State Economist
State Planning Office

Good Afternoon. Now that we've had an opportunity to discuss the challenges and opportunities that each of the five natural resource-based industries are facing individually, it is now time to turn our attention to the issues we are facing collectively, and to put forward our best thinking as to how we find common solutions.

Even a cursory examination of Maine's history clearly illustrates the role that fishing, farming, and forestry have played in shaping the persona & heritage of this great state. When the first Maine Legislature convened in 1820 they adopted this shield. The display of a farmer, a mariner, the forest, land, and sea was an apt choice given 80% of Maine's workers was employed in these industries. Since that time, a number of powerful changes have occurred that have completely transformed our economic base:

- The industrial revolution
- The rise of the service sector
- The evolution of the knowledge-based economy
- Globalization of world markets
- Technology

While Maine’s natural resource-based economy is clearly not as dominant as it once was – it remains a critical & foundational piece of today’s economic base and provides livelihood to people in every county.

This morning was spent focusing on each industry individually:

Fishing – Maine’s proud maritime heritage continues to support villages in all 8 coastal counties.

Farming – Agricultural operations dot the landscape of Maine; from the apple orchards and dairy farms that span the central inland counties to the vast potato fields of Aroostook and the blueberry barrens of Washington & Hancock Counties.

Forestry – Logging operations, lumber and wood products, pulp and paper production dominate the economic base of the four western mountain counties as well as Aroostook and Washington counties. And the vast infrastructure needed to finance, supply, and ultimately ship these products employs thousands across the state.

Tourism – Since the early days over a century ago, when people ventured to Poland Springs to taste the cool, healing waters, tourism has grown to be one of Maine’s largest and most rapidly expanding industries as it now provides over \$8.5 billion in statewide economic impact.

Aquaculture – And over the past 23 decades, Maine’s coastal waters have given birth to a new industry – aquaculture. This industry holds great promise for Maine given our fishing heritage and world demand for seafood products.

Together, the industries in this room today account for approximately 1 out of every 5 jobs in Maine. Together, the five industries in this room today contribute about 1 out of every 5 dollars of wealth generated. Together, you have a major presence in each of the 16 counties. Now that provides significant clout, and a great place to start flexing your collective muscle is to clearly understand the issues you share and work together towards common solutions that benefit all.

Access to the Natural Resource - In order for Maine's natural resource-based industries to survive and prosper, it's essential for them to have effective and continuing access to the resource they use. Be it relatively flat & open land for farming, sizable forests for harvesting wood, shore frontage & docking facilities for commercial fisheries & aquaculture, or access to Maine's lakes, rivers, mountains, ocean & forests for hunting, fishing, hiking, boating or camping. As simple and obvious as that may sound, there are some major trends that have been limiting access. These trends include – sprawling patterns of development, rising land valuations, conflicting uses of the resource, fragmentation of the land base, and changing ownership patterns of large forest tracts.

Land, particularly in southern and coastal areas, is being consumed at an alarming and accelerating rate. Over the past few decades there was as much land developed in Maine as there had been in the prior 150 years. And the forecast is for the area developed over the next few decades to double again. This pace of development and the sprawling pattern of development are putting enormous strain on our natural resources and on the industries that rely upon these resources for survival.

With rapid real estate growth, orchards and farmlands become attractive for residential sub-division, property values and tax valuations rise; fishermen are forced back from their extremely expensive shore front properties; farmers sell off their land base to fund retirement or to get out from under burdensome property taxes; and woodland owners are tempted to sell off parcels for development or to liquidate valuable timber.

The first cousin of sprawling patterns of development is the rise in conflicting uses. It's odd to imagine that subdivisions are built right next to working farms and then the new residents complain when manure is spread or tractors run in early morning hours. The same is true of those coastal residents who build upscale housing on the coast and are troubled by unsightly fishing vessels, smelly fishing gear, or aquaculture pens in their view.

And the fragmentation of the land base often results in parcels that are uneconomic for harvesting timber or planting crops and that alters or ruins animal habitats. Draft recommendations to address access issues include: strengthening service center communities to stem the ill-effects of sprawl on rural Maine, developing a clear, long-term vision and strategic action plan for statewide, public-private, land conservation & easements to assure multi-use working forestland, lake & ocean access & farmland preservation, reauthorizing the Land for Maine's Future program with a new bond issue, and strengthening "Right to Farm" and Right to Fish" laws.

Market Development and Branding - A second major cross-cutting issue is Market Development and Branding. With the commoditization of product markets and the evolution of fierce global competition, it has become increasingly difficult for small Maine firms to compete and to differentiate their products. We need expanded markets for Maine products within and beyond our borders. And

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there are tremendous market development opportunities that could evolve from successful, comprehensive branding.

Separate branding campaigns have been developed for Maine's natural resource-based products and have met with success. Certainly Maine wild blueberries and other farm products are known for being fresh, healthy, and delicious. As is the Maine lobster and other seafood products – already recognized as being of the highest quality and value. And with the rapidly expanding certification of Maine wood, our premium forest products become even more valuable and attractive in the market place. Uniting these individual branding efforts under one common theme would only strengthen the message and would help make Maine's limited marketing dollars stretch a lot further.

In addition to comprehensive branding, other recommendations include strengthening links between Maine's agricultural entities and fisheries and restaurants and institutions. A vast under-served market is right here in Maine. Every effort should be made to serve and feature Maine food in – restaurants, bed & breakfasts, government buildings, university and college campuses, and at events such as this conference today where our food was "Made in Maine".

Strengthening farmer's markets helps local farmers, builds wonderful community ambiance and can provide cultural and eco-tourism opportunities. Another recommendation is that we develop & formalize strong working relationships with Atlantic Canada; exploring joint production and marketing of aquaculture and other seafood products as well as agricultural & forest products.

Strengthening Small Business Support - Once you strip out the paper companies and a few large resorts, the vast majority of businesses in these five industries are small – frequently considered micro-enterprises. Further, because they depend on particular natural resources, they tend to be located in far-flung rural areas. Given the small scale of their businesses and the remote location, it's very difficult to secure affordable insurances, to access technical and educational training, to participate in political processes, and to gain clout or purchasing power in the market place.

To strengthen our natural resource based businesses, we should encourage the development of strong partnerships with the University, the Community College, the Small Business Administration, and any other entity that can help deliver training out in rural regions. We should explore the development of apprenticeship & mentoring programs. And we should build on the successful 2+2+2 programs that offer an educational ladder from high school through the university.

Recently healthcare costs in Maine have grown much faster than in the nation. We should use the Dirigo Health Plan as well as forming inter-industry co-ops to purchase affordable health, dental, long term care, and worker's compensation insurances to help these sectors.

And as Maine's labor force ages and grows more slowly we need to ensure that our tourism and agricultural sectors have access to vital seasonal labor.

Objective Data, Research & Science - The fourth cross-cutting issue that emerged is the critical need for objective, timely, accurate data, research, and science. In a knowledge-based economy, research and development is the cornerstone of prosperity. For our tourism industry to prosper, we need to understand the carrying capacity of our tourism attractions as well as market trends. We need data to identify and capture new markets. We need science to ensure sustainability. We need information on best practices to reduce costs and improve products. We need a comprehensive, bold research agenda for Maine's natural resource-based industries that will enable us to fully participate in the new economy.

The *30 and 1000* effort which began in the late 90s and is fully and actively supported by the Baldacci Administration has already paid huge dividends in a very short period of time Maine has moved from 47th in the nation to 38th and our recent investments should continue to move us along that path.

In the same way that investing in R & D is helping to close the income gap that has long separated Maine from the nation, solid information on which our natural resource-based industries can make decisions will lead these industries towards growth.

In the lobster industry, for example, we know that landings have grown phenomenally. But we don't yet fully understand why the lobster population grew, if it will continue, or if it will collapse. And the scientific research needed for the fisheries is not that dissimilar to the types of research needed in forestry and farming to ensure a viable future.

And perhaps even more important than using research to address challenges we face is using research to identify new products and services. Maine sits on a vast ocean resource called the Gulf of Maine. Through the Gulf of Maine Ocean Observing System, we are only beginning to learn about the vast treasures that this gulf may hold. So frequently we base our view of the world on what we know now, but it's exciting to think that maybe the greatest opportunities for Maine's wood fibers, agricultural products or bi-products, and marine resources have not yet been discovered or developed.

Whether it's wood fiber used for new construction materials, forest or agricultural biomass converted to cleaner, renewable fuels, or medicine harvested from the sea, all offer great promise for Maine and all demand a vastly greater focus on research and development.

Tax Policy and Economic Development Industries - The fifth cross-cutting issue which touches all industries involves business climate factors such as, tax burden, energy costs, and regulatory issues. While these issues are certainly not unique to these 5 sectors, they are critically important nonetheless.

The recent referendum highlighted Maine's tax burden ranking, where we've led the nation for nine years. The only way to reduce burden is to cut programs, find efficiencies through regionalization and consolidation, or raise income. And this Governor has been steadfast in his refusal to raise taxes and in his commitment to containing spending.

And despite significant improvement since the restructuring of the electric utility industry, industrial electricity rates remain far above average. The excessive costs of doing business in Maine have certainly taken their toll on investment.

Maine has many old manufacturing facilities that desperately need capital investment in modernization if they hope to compete. As global competition accelerates, Maine firms must be encouraged and enabled to invest in technology and state-of-the-art processes. Maine's workers are currently only 80% as productive as workers nation wide. This is not at all an indictment of Maine workers' abilities or work ethic. It is an indictment of our investment climate. We must invest in technology and modern equipment if we want to increase productivity and compete.

Recommendations to address this issue include:

- Eliminate the Personal Property Tax on equipment and machinery
- Extend Pine Tree Zone benefits to natural resource-based industries
- Develop a plan for reducing energy costs
- Establish meaningful development incentives to encourage tourism investment in targeted areas.

Public Infrastructure - The final cross cutting issue that we'll explore today is Public Infrastructure. Infrastructure seems so basic, so mundane - and yet it is the linchpin of economic success. In no industries is traditional infrastructure more important than in the natural resource-based industries – roads, bridges, rail, and ports –all absolutely essential.

Transportation infrastructure is also of critical importance to the burgeoning tourism industry. The ability of the tourism industry to continue along a growth path will be determined, in part, by our

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creative responses to highway congestion. Successful investment in –the Downeaster, the CAT, and the Island Explorer –provides great inspiration in this area.

DOT’s inter-modal facilities are playing an important role in creating an efficient freight transportation system. And DOT investments in regional connectivity are absolutely essential in connecting Maine’s goods and services to their markets in a cost effective and safe manner. Rail remains an important piece of the freight system as do ports and warehousing.

And sprawl has led to the genesis of a new infrastructure issue: Affordable Workforce Housing. Affordability of adequate housing has become a significant problem for Maine’s 7 southern-most counties and led the Governor and the Legislature to put a workforce housing bond issue on the ballot last June.

We have been given the stewardship responsibility for one of the most breathtakingly beautiful places on earth. We have responsibility of preserving pristine lakes and rivers. This task is great considering the water-cover in Maine is roughly the same acreage as the entire state of Delaware.

We have responsibility for maintaining the 3000 miles of unique and stunningly gorgeous coastline – the crown jewel that attracts tourists, retirees, entrepreneurs, and students to Maine and provides livelihood to a number of marine industries.

We have responsibility for utilizing our vast forest resources in a responsible and sustainable manner.

As Charlie Colgan frequently states, the Maine economy is at a crossroads. The path is ours to choose. I see at least three possible choices:

We could choose a path of despair where we become overwhelmed by the huge market forces that press upon us and we become paralyzed – ensuring a continued downward spiral; or

We could choose the path of wishful thinking where we express some optimism but we remain passive – taking no action, and that path will likely lead us nowhere; or

We can choose the path of hope. Now I don’t mean a Pollyanna approach that ignores or glosses over issues. I mean a hope that is active and tenacious. The seeds of hope must be planted in the harsh soils of reality. Hope must be nurtured with knowledge and vision for all that can be. Hope bears fruit with perseverance and action.

I return to our Seal. This is our Past. This is our Present. We owe it to ourselves and our children –to choose the path of hope –to make these industries a vibrant, dynamic part of our future.

Thank you.

Appendix E: Maine Agriculture: A Natural Resource Based Industry Constantly Adapting to Change

By Stewart Smith
Professor of Sustainable Agriculture Policy
Department of Resource Economics and Policy
University of Maine

Maine agriculture continues to respond and adapt to new world environments with varying degrees of success. It has historically done so, and continues today. Some of these responses are represented by long historical trends; others may be the start of new trends. This paper explores those trends as part of the context to understanding the current condition of Maine agriculture. It then lists a number of strengths and weaknesses of Maine agriculture, discusses opportunities provided by them, and suggests some “new ways” of thinking that might further the capture of those opportunities.

The paper focuses largely on the farming sector, since it holds most of the land base and has been the major constituent of Maine agricultural policy. It focuses less on the processing and the distribution and retailing sectors, although each is a much larger component of the food and agricultural system than farming. It is important to recognize that while the focus of the paper is on the farming sector, food processing and distribution are essential components of the Maine food and agricultural system, and each substantially exceeds farming in economic value added.

Background

Industry Structure: Two Perspectives

Maine agriculture today can be viewed from two perspectives. The more common view is of an industry that produces agricultural commodities. This view is commonly referred to as *commodity agriculture*⁷. By that view we perceive Maine agriculture to be potatoes (about \$100 million sales per year), milk (~\$100 million), eggs (~\$60 million), blueberries (~\$30 million), nursery (~\$25 million), vegetables (~\$20 million), cattle (~\$15 million), apples (~\$10 million), and a number of commodities with lesser sales⁸. Most of that production is destined for regional, national, and international markets, often through commodity processors. Altogether, sales at the farm level totaled \$419 million in 2001 (New England Agricultural Statistics Service). Thirty years ago, from this perspective, Maine agriculture would have been potatoes, broilers, eggs, and milk, with apples, blueberries, cattle, and other commodities, all totaling nearly \$400 million. While the mix of commodities has changed somewhat, the nominal value is quite similar, suggesting a decline in real value since the mid-1970s (Table 1).

In addition to farm sales, commodity agriculture includes a processing sector that converts raw agriculture products grown in Maine into processed products for sale to consumers or for further processing, especially for milk, blueberries, and potatoes. This industry segment represents about \$500 million of sales, or about 50% of total food processing in the State, and is vital to the viability of commodity farming.

⁷ It should be noted that *commodity* as used here is quite different from its use by USDA where commodity refers to grains and other crops specified in certain Federal legislation. There, potatoes and blueberries, two of the largest crops of Maine commodity agriculture, are identified as specialty, rather than commodity, crops.

⁸ Since aquaculture is not considered part of agriculture in this project, this paper does not include those sales, which currently add about \$50-60 million to Maine farm sales when included.

Table 1: Maine Cash Farm Receipts without Aquaculture
(Selected years in nominal dollars, millions)

	1970	1973	1975	1980	1985	1990	1995	2000	2001	Composite (1973-2001)
Potatoes	67.5	141.8	88.1	96.0	79.9	139.5	97.1	114.8	101.8	107.4
Milk	42.2	50.8	61.1	91.6	91.1	91.9	88.3	93.2	105.8	84.2
Eggs	503	79.2	90.1	104.6	79.4	90.0	73.8	56.4	56.6	78.8
Other Poultry	54.7	86.8	91.1	85.7	35.0	4.6	3.9	3.6	3.0	39.2
Blueberries	1.9	5.9	3.2	8.1	11.4	27.7	21.0	44.3	23.0	17.1
Cattle	7.8	9.7	6.3	14.5	20.3	19.7	16.4	17.4	17.0	15.2
Green/Nursery	2.2	3.0	3.5	6.6	8.9	18.8	28.6	23.9	24.4	14.7
Vegetables	4.3	4.2	3.4	4.3	4.3	13.6	18.4	27.0	24.4	12.5
Apples	5.0	13.9	7.5	12.5	13.0	15.3	10.2	9.9	9.2	11.4
Other	5.3	3.3	12.7	11.0	30.5	28.7	47.5	51.1	54.0	29.9
Total	241.2	398.6	367.0	434.9	373.8	449.8	405.2	441.6	419.2	411.3

Source: Economic Research Service

An alternative perspective of Maine agriculture is of a state food and agricultural system, where agriculture is an industry that provides food and related products to human consumers. This perspective is usually referred to as *local agriculture*. In this way, we can view Maine agriculture as a system with direct economic activity of about \$3.3 billion. Agricultural production (farming plus input sector) comprises about 13% of that system (~\$435 million), food processing 30% (~\$1 billion), and food distribution and retailing 57% (\$1.9 billion) (Gandee). While farms are distinct from non-farm firms in the food processing and the distribution and retailing sectors in this perspective, a number of farms do provide those services, albeit on a relatively modest scale. As some Maine farms find global commodity markets less attractive, opportunities to provide marketing services within the Maine food and agricultural system become more attractive.

While the above perspectives are laid out as two distinct systems, it is important to recognize that many Maine farms fall along a continuum between these two systems. However, the distinction between Maine agriculture as a commodity producer/processor system or as the Maine food and agricultural system is a useful and compelling one when considering the historical context, future direction, and policy implications of Maine agriculture.

The Maine Agricultural Land Base

A viable agriculture depends on an adequately productive land base. In 1997, Maine had 1.2 million acres in farmland, a decline of more than 50% since 1964. Of that, 534,000 were in cropland compared to 894,000 in 1964. By county, Aroostook, with 188,000 acres in 1997, contained one-third of all Maine's cropland. Penobscot had 49,000, Kennebec 45,000, and Somerset and Washington 36,000 each. Five counties, Waldo, Cumberland, York, Androscoggin, and Oxford each had between 20,000 and 30,000 of cropland, much of it in areas under heavy development pressure (U.S. Department of Agriculture).

According to the State Planning Office, between 1992 and 1997, Maine converted 33,560 rural acres *per year* to development, a rate four times that of the previous decade, and greater than the cropland in nine Maine counties. This conversion had moved out from more heavily populated areas in the southeastern portion of the state to more rural towns with natural resource based industries. It has resulted in the loss of a substantial volume of land used by the livestock industry to pasture animals and produce feed crops.

Substantial anecdotal evidence indicates that residential development pressure extends the length and breadth of Maine, boosting market values above those generated by agricultural production. In the

northern areas, the demand is for individual house lots and seasonal homes, rather than commercial development; but the impact on fragmenting the agricultural landscape and increasing farming costs is similar. The Maine Department of Agriculture, Food and Rural Resources (2003) recently published the results of a two-year planning process to address farmland-loss statewide.

It should also be noted that agricultural production is unevenly spread across the Maine landscape. Most Maine potatoes are produced in Aroostook County, most of the milk is produced in a seven county dairy belt centered around Kennebec County, and most blueberries are produced in Washington and Hancock Counties. These areas are particularly vulnerable to price and yield fluctuations of their particular commodities.

Farm Numbers, Size, and Types: Some Historical Context

Trends of farm numbers and size tell an interesting story of Maine agriculture that is somewhat different from agriculture nationally. Like all states, Maine had substantially more farms at the beginning of the last century than at the beginning of this one (Table 2). As farming has become more industrialized, farming activities have been replaced by non-farm activities, and labor has moved from the farm to non-farm jobs, many to the input or marketing sectors of the food and agricultural system. At the national level, between 1910 and 1997, farming activities and returns constantly declined while marketing and input activities constantly increased. As a proportion of the domestic food and agricultural system, farming returns declined about 65% while the marketing share increased by 35% and the input share by 40% (Figure 1). The Maine picture is quite consistent in terms of these shifts, with the input sector claiming less than 50% of farm revenues in 1950, but 70% in 1997 (Smith 1999).

Industrialization has simplified farming systems and allowed farmers to operate larger farming units. By capturing economies of scale, larger farms can expand by buying smaller farms, a trend that represents economic land use rationalization and continues today in commodity agriculture. Specialization and economies of scale provided by the industrialization of agriculture allowed areas within the State to specialize in the production of specific commodities. Potatoes contributed 50% of total farm revenues in Aroostook County in 1910, and 83% in 1997. Dairy, the largest individual commodity produced in Kennebec County, contributed just 15% in 1910, and fully 45% of revenues in 1997 (Smith). Consolidation, concentration, and regional specialization shaped the structure of Maine agriculture throughout the past century.

Table 2: Size Consolidation of Maine Farms
(Selected Years, 1880-1997)

	1880	1910	1978	1997
# of Farms	64,309	60,016	6,775	5,810
Acres/Farms	102	105	221	209
Sales/Farm (\$1992)		17,026	97,226	71,110

Source: Ahn et al; Smith

**U.S. Domestic Agro-Food System Shares as Linear Trends
1910-1997**

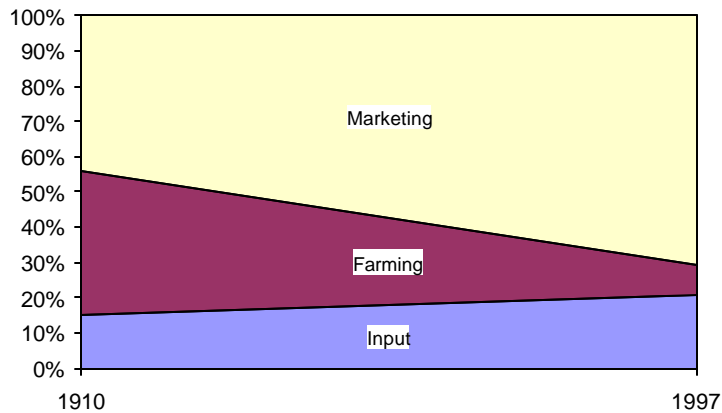


Figure 1: Source: Smith & Files

Despite the similarities between Maine and U.S. agriculture in the above trends, Maine has diverged from national trends in interesting ways since the 1970s. Average farm size increased from 105 acres in 1910 to 216 acres in 1980, and has since leveled off. In constant dollars, the average sales per farm increased nearly 500% from 1910 to 1980, but have declined since (Table 2). The halt to the growth in average farm size in Maine since the mid-1970s resulted from the entry of smaller farms, usually participating in local agriculture, rather than a change in the direction of commodity agriculture. In Maine, unlike most states, farm numbers remain quite stable and average size even declines, while commodity farms continue to get larger and fewer.

The increase in smaller, more diversified farms since the 1970s suggests a growing and potentially viable farming sector for Maine. This agriculture appears in at least two forms. One is a relatively small but quite diversified farm that sells its output to the final consumer who usually is a local resident or visitor, or to a local institution. These farms are likely to be near population areas and are substantially integrated into their local community.

Another farm type seems to be proving viable at the mid-size range by alleviating some of the dependence on economies of scale. This farm is moving away from the strict commodity model on the production side, but not necessarily on the marketing side, although it may access higher value markets. Costs are reduced with a more complex production system, including integrating crops and livestock enterprises. The characteristics of these farm types are outlined in Appendix A.

While these farm types generally produce less than a specialized commodity farm in total farm output, on a per unit basis they can leave more net income for the farm, generate more value added for the total farming sector, and integrate more directly into the local community. They offer hints to policy options designed to maintain farm numbers. As long as commodity agriculture efficiencies are driven by economies of scale, commodity farms must continue to get larger and fewer even as production is maintained or increased. On the other hand, small and moderate sized farms can be an important component of the local food system.

Maine seems to be moving towards a viable, dual agricultural structure that has important implications for state agricultural policy.

Strengths

- Despite a decline in total real value of commodity agricultural production, Maine agriculture has a number of strengths.

A diverse agriculture

Maine agricultural production, compared to other states, is quite diversified. The largest single valued commodity in Maine, usually potatoes, generally represents less than 25% of total farm sales. Several states depend on a single commodity for 50% of farm revenues; Vermont gets 75% of its farm sales from dairying. Unlike most other states without a single dominant commodity, such as California or Florida, Maine farm sales are evenly split between crop and livestock revenues, and six commodity categories contribute at least 5% to farm sales. All of these measures point to Maine being a relatively diverse producer of agricultural commodities.

Within these conventional measures of agricultural diversity, Maine agriculture offers a large number of certified organic farms, a dominant seed potato subsector, an aggressive wild blueberry marketing strategy, a growing potato processing sector, a quality-seal milk marketing program, a growing winter vegetable subsector, and nationally recognized vegetable seed firms, to name a few.

This diversity has at least two major advantages. It provides some statewide protection from disruptive production and marketing episodes that result from temporary low yields or prices; and it provides greater flexibility to respond to changing consumer demands and market opportunities. On the other hand, it also adds to the complexity and costs of providing services.

Farm production near consumers

Many of our farm production resources are located near residential areas. While this can often create conflicts between local residents and farmers over farming practices that residents may perceive to be disruptive, it provides considerable opportunity for farmers to market their product more directly to consumers and to sell products with a farmer identity. Both of these attributes allow farmers to provide marketing services and to tap into the substantial amount of marketing margins in the food and agricultural system.

A large local market relative to farm production

In addition to proximity to consumers, Maine farmers also enjoy a relatively large local market relative to the value of farm sales. Maine households purchase about \$3 billion of food products and services annually. Maine farmers currently contribute less than 4% of that value. If farmers provided 10% of Maine consumers' food goods and services, farm income would increase by \$180 million annually. There appears to be ample room for Maine farmers to grow this market segment.

A strong commodity processing sector

Maine has a reasonably strong processing sector that contributes to the global competitiveness of Maine's commodity agriculture. While only one major frozen fry plant remains in Aroostook County, it now supplies the fast food market, the premium market place for frozen fries and one unavailable to Maine farmers in the past. The plant takes nearly one third of the annual potato crop and is part of a large privately held Canadian food processing firm. A number of smaller firms process an array of other potato products.

About half the milk produced on Maine farms is processed in one of the State's four processing facilities, two of which remain independent and locally-owned. The other plants are owned by two national milk processing firms that have been purchasing local and regional processors to achieve

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advantages associated with dominant national milk marketers. Two of the plants are located within the city of Portland; a third is a relatively new facility on the outskirts of Bangor; the fourth and smallest is in Aroostook County.

Most of the wild blueberry crop is processed by one of the seven established freezers in Washington and Hancock Counties. One of those is Canadian-owned, with plants on both sides of the border, and one Maine-based firm has a processing facility in Canada. Blueberries move freely across the international border during the freezing season.

Canadian management and capital

While the relationship between Maine agriculture and Canada is complex and multifaceted, Canadian management and capital play an important role in Maine agriculture by supporting a substantial portion of the frozen fry processing capacity in the Maine potato industry, and a part of Maine's wild blueberry processing. While there is considerable episodic tension between Canadian and U.S. agricultural interests, it is likely the Maine food processing infrastructure would be substantially compromised without access to Canadian management and capital.

A climate of natural rainfall and pest suppression

While on balance our climate is a harsh one for growing several long- and warm-season crops, Maine agriculture has certain favorable climatic conditions. Our natural rainfall allows production of certain crops for certain markets without supplemental irrigation. Many feed crops and vegetables are produced without irrigation, reducing production costs for established farmers and capital requirements for entering farmers. However, in some years, crops grown without irrigation can experience low marketable yields, resulting in market share and financial losses for farmers. Lack of irrigation on much of Maine's potato crop has recently been identified as a substantial industry constraint (Planning Decisions).

While our short growing season limits certain crop production options, when combined with our relatively long and cold winters it can also substantially limit pest pressures. A number of pests do not make it through our winters, and the short growing season limits the number of pest generations per season. Pest management options are increased, allowing reduced costs and the potential capture of green market advantages for both commodity and local agriculture farmers.

A well-organized industry forum

Maine agriculture is relatively well organized to reach consensus, develop strategies, and promote solutions. The Maine Farm Bureau continues to provide a statewide industry voice for many farmers across commodity interests. Several established commodity groups have trade associations, although they assume various forms. Several newer and smaller industry segments are now organized into associations. Unlike many other states, Maine has a strong alternative agriculture association, the Maine Organic Farmers and Gardeners Association (MOFGA), with some 4,000 members and a strong lobbying presence, and an emerging Maine Sustainable Agriculture Society (MESAS).

All these groups, as well as the Maine Department of Agriculture, University of Maine agricultural administrators, and Federal government personnel participate in an umbrella coalition, the Agricultural Council of Maine (AGCOM) that can provide a consensus voice for Maine agricultural production.

Weaknesses

- Despite a number of strengths, Maine agriculture also faces some weaknesses.

A land base limited in quantity and quality

Relative to most other states outside New England, Maine has a limited land base in both quantity and quality. With the exception of Aroostook County's farming area, the Maine landscape is one of forestlands with occasional fields, often along river valleys. For the most part, contiguous farming fields are in the tens of acres, rather than the hundreds or thousands of acres found in other parts of the country. This limitation will become increasingly critical for commodity farmers who must compete in regional and national markets by capturing economies of scale. As future efficiency gains call for 2,000-acre potato farms and 1,000-head dairy farms, fewer and fewer Maine farms, especially outside Aroostook, will find the land base to remain competitive, although some will capture certain scale economies by establishing production units in multiple locations.

In addition to a limited land area, outside of certain areas in Aroostook County and some valley intervals, the quality of the land base is challenging. The soils are naturally acidic and many are stony and shallow to bedrock. Substandard soil quality in many areas increases the cost of production for many cropping options.

Sprawl and development pressures

Much of the agricultural land base, especially in central and southern Maine, is under growing development pressure. Across much of Maine, market values for agricultural lands exceed their agricultural production value, even for farms that are otherwise profitable. As more agricultural land is developed in an area, the more difficult it becomes for commodity farmers to remain competitive. In many cases, they lose access to agricultural land and face erosion of both private and public infrastructure support. Much of the current development in rural areas is taking place along the southern and central I-95 corridor, among a substantial volume of dairy and mixed vegetable production. Without appropriate land use incentives and controls, development pressure means agricultural land is unlikely to transition to new farmers for agricultural use in many areas of the state.

A short growing season

While Maine's climate is difficult for some agricultural pests, it also limits crop choices. Degree-days in Maine are low compared to most agricultural areas in the U.S., substantially limiting our choice of crops and crop varieties. We can grow grain corn, but Maine farmers cannot use the late maturing varieties that produce high yields and low per unit costs. Aroostook County's comparative advantage is in potato production, but the short growing season limits production protocols that produce high yields like those in the Pacific Northwest, for example.

Limited water supplies

While we have more natural rainfall than some areas, the low financial margins and demand for product consistency associated with commodity markets and the need for consistent yields associated with local agriculture increasingly require supplemental irrigation, and Maine has limited access to water supplies. We lack large, easily accessible aquifers found in many agricultural states, and we have no river systems dammed to provide irrigation water for agriculture. Concern for wetlands protection requires farmers to build costly reservoirs from which to irrigate. With an increasing need for supplemental irrigation, lack of water access will put Maine agriculture in a deteriorating competitive position without effective policy support.

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High input and labor costs

Relatively high labor and purchased input costs put Maine farmers at a disadvantage. Most purchased inputs carry a relatively high transportation cost; and especially in the more central and southern areas of the state, labor costs are high compared to some other major agricultural areas. Some farmers experience the effects of a lack of labor because of the difficulty to pay competitive local wages and benefits. In other cases, some cropping systems have heavy seasonal labor demands making it difficult to find adequate labor supplies for short periods.

The Canadian proximity

The Canadian factor is a weakness as well as a strength. While we get substantial capital and management resources from Canada, some important commodity markets are supplied by Canadian sources. Because of exchange rates, certain Federal programs, and special agricultural trade regulations, Canadian competition, especially in the potato sector, is very aggressive and often perceived to be unfair. Solutions to these issues, however, lie more with Federal than state policy.

Difficulty remaining competitive

Several of the above factors will limit the ability for a substantial number of Maine commodity producers to remain competitive, although total production and farm sales may be maintained and in some cases increased. For example, Maine's dominance in the national tablestock potato market has passed, but markets for Maine processed potatoes have expanded.

Maine milk production is experiencing market trends similar to tablestock potatoes. Federal "market reform" of the dairy sector means further withdrawal of the federal government from price-support intervention. Maine dairy farmers are finding that the higher costs of producing milk in Maine makes it increasingly difficult to compete in the regional market in this less-regulated market. In the long run, commodity milk producing survivors will likely be those that can continue to capture economies of scale or adopt cost-reducing strategies like intensive grazing.

The regional apple market represents a dramatic example of the difficulty of commodity competition for Maine farmers. Maine apple sales have declined over the past two decades, first from competition from domestic supplies, forcing a number of smaller orchards to sell out, and then indirectly from foreign supplies, including apple juice imported from China, that has resulted in the closure or downsizing of some of the State's larger orchards. The apple industry is reorganizing into one that serves local markets and may represent a precursor to other commodity industries in Maine.

Opportunities

The above strengths and weaknesses suggest a number of opportunities for Maine agriculture, especially its farming sector.

Maintaining a base of competitive commodity farms

While commodity farms are declining in number and will continue to do so, they will continue to produce the majority of farm income and use the bulk of the resource base for the foreseeable future. The Maine resource base can sustain a certain number of commodity farms in certain areas. Given the existing infrastructure support and human resource capacity, these farms should continue to produce economic returns to farm families, employees, and rural communities, although the number of employees per unit of output will continue to decline. Much of the output will reach consumers through in-state processing firms, further contributing to Maine's economic base, and requiring appropriate attention from state policy makers and regulators.

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Challenges

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Transitioning agricultural resources

Responding to opportunities will likely require transitioning some existing agricultural resources to new uses and in some cases with new farmers. Many farmers prefer the production process and will not want to shift to systems that require more attention to providing marketing services. Transitioning farm resources will be challenging, and more so with new farmers.

Supporting entry farmers

Assuring that new farmers have access to agricultural resources is critical if Maine is to maintain farm numbers. Unlike earlier years, many new entrants, especially those in the growing local agriculture segment, are not from farm backgrounds. They have no farm to take over. They must assemble a comprehensive package, usually with third party financing. In other cases, farms transfer within families. The substantial value of assets to be transferred, and the limited liquidity often associated with them, presents challenges to the exiting – and often retiring – farmer, as well as to the entering generation.

Enlisting and directing agricultural research

Research and development will continue to be essential for commodity farmers to remain competitive, especially as Maine farmers find themselves increasingly relying upon markets for higher valued products. In addition, if integrated farming systems are potentially beneficial, considerable research will have to be conducted to develop methods for managing these more complex systems. For at least a century, much agricultural research has focused on simplifying farming systems. Shifting research to support more complex systems will require considerable change in agricultural research direction.

Assuring effective and efficient regulations

Farmers manage substantial land resources that can impact the environment, and they employ a substantial number of workers, including seasonal and migrant workers. Consequently, they face substantial environmental and labor regulation. Additionally, food processors and distributors, which are essential to the commodity system, are substantially impacted by state regulations. Regulatory protocols must be effective in achieving their purpose and efficient for both regulator and regulated in their implementation.

Balancing marketing support

Finding the proper balance between public support for commodity marketing that relies on external markets, and for local agriculture that relies on internal markets, presents a balancing act. External markets will consume the greater volume of Maine's farm production, but local markets will likely provide an increasing value to Maine farms. Finding the proper balance will not be easy.

Some New Ways of Thinking

Recognizing declining commodity farm numbers

While commodity agriculture will continue to utilize the bulk of farm resources and produce the bulk of farm output, a decreasing number of Maine commodity farms will remain competitive in national markets, implying that support to commodity farming must be carefully targeted and managed. Many commodity farms will likely exit or transition to other farming systems. Misdirected public support will slow necessary adjustments and limit new opportunities.

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A growing local agriculture

Local agriculture should be recognized as a substantial and growing component of Maine agriculture. It needs to be placed in the mainstream of the agricultural community, and receive appropriate policy and program support.

Sustainable rather than linear agriculture

Maine agriculture needs to be thought of as cyclical rather than linear. We cannot compete by importing inputs with high levels of embedded energy. Using the outputs of our own agricultural activities or of local urban activities as inputs for other agricultural activities will contribute to a more viable agricultural future, but will require a reconception of the agricultural enterprise and the public role in agricultural recycling.

Multi-functionality of Maine farms important

We need to recognize that farms provide a number of important public amenities, like open space and recreation, that Maine residents value highly but do not purchase in the marketplace. These benefits, often referred to as multi-functional farm outputs, require public support. We need policies to assure that these benefits will continue to be provided, and that farms are appropriately compensated.

Shared vision as guide

State agricultural policy must be guided by a shared vision rather than by narrow interests within and outside the industry. For a more viable future agriculture in Maine, a shared vision must trump special interests in the development of public policy and the delivery of public services.

Conclusion

Maine agriculture has historically adapted to changing environments. It will continue to do so. The result of that adaptation will *not* look like agriculture in major production areas of the country. The vitality of Maine agriculture rests less on our ability to copy other agricultural areas, and more on our ability to innovate with our own resources and constraints.

Appendix A: Integrating enterprises on mid-sized farms

While it is sometimes difficult to statistically demonstrate the trend of mid-sized farms adopting integration strategies, it can be observed anecdotally. One case is management intensive rotational grazing (MIRG), especially in the dairy sector. A substantial number of Maine dairy farmers have found that they can reduce costs by intensively managing their pastures with a series of paddocks, displacing much of the forage produced by row cropping and the grain previously imported from the mid-west. A recent survey of dairy farms in central Maine indicates that more than half are doing some degree of MIRG.

Another example is integrating cash crops and livestock enterprises. This is taking at least two forms. In one case dairy farms are adding vegetable production on the same farm. Agriculture Commissioner Spear's family farm is a good example of that kind of farm structure change. In another form, two different commodity farms are cooperating to manage their land base as a single unit. The Fogler/Dorman dairy/potato operation in Exeter is a prominent case, although there are others in that same area and around the state. Recent work at the University of Maine indicates that integrating potatoes and dairy can increase both net farm income and farming value-added substantially (Files).

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Appendix F: Aquaculture in Maine: A Policy for a Sustainable Industry

By Spencer Apollonio
Former Commissioner
Maine Department of Marine Resources

Executive Summary

Aquaculture has employed over 1000 people (Inches MS 2001, Anon. 2001)⁹ and produces Maine's second largest seafood harvest. Its value in 2000 was in excess of \$100 million.¹¹ It offers Maine substantial potential for growth and employment opportunities. Aquaculture in general has greater potential for significant growth than any other seafood industry (Tacon 2003). It has generated significant controversy for a variety of reasons. Both industry proponents and those concerned about it for various reasons identify the climate of uncertainty as their principal concern. Aquaculture in Maine is a symptom of increasing conflicts of coastal uses, real and potential. The challenge is to accommodate and balance the various interests and concerns for coastal development – of which aquaculture is the most conspicuous and urgent point of contention.

This paper is not intended to present a comprehensive analysis of the status, potential, and problems of Maine's aquaculture industry. Its purpose is to attempt to identify the principal issues affecting the future of aquaculture in Maine and to suggest the need for an explicit state policy to foster the long-term sustainable development of aquaculture.

Background

A form of shellfish aquaculture was authorized by the Maine Legislature early in the last century, but little happened. In the 1970s there were unsuccessful attempts at trout farming in the midcoast area. Shellfish farming began in the 1970s and early 1980s and has continued and expanded ever since. By 2002 there were 445 acres leased by the State for eighty shellfish farm sites. Seaweed farming also began about twenty years ago and now leases about seven acres. Salmon farming began in Cobscook Bay in the early 1980s. By 2002 750 acres were leased for forty-four finfish sites (Fisk MS 2002). This finfish acreage is approximately equal to one-third of Rockland harbor. Finfish production reached over 35 million pounds in 2001 (Inches MS 2001). The production dropped in 2002 and 2003 because of losses caused by disease and winter temperatures. Maine is the largest marine aquaculture producer in the United States. The combined economic impact of finfish and shellfish¹² farming in Maine may

⁹ Indirect employment apparently is subject to debate. James Wilson, Professor of Marine Science, UMO, stated total employment of the salmon industry in Maine, direct and indirect, to be 2500 (see Impact of the Atlantic Salmon Industry on the Maine Economy at www.umaine.edu/marinescience/archives/ResEconomics/salmon-economy.htm). A study initiated by the Department of Marine Resources and now underway will estimate direct and indirect employment which will differ from earlier estimates.

¹¹ Survey by Maine Aquaculture Association. With respect to the salmon industry, James Wilson estimated "pre-tax, personal income" at \$110-140 million (see note 1/). Linda Kling and Michael Opitz, Associate Professors, UMO, estimated the "farmgate" salmon value in 2000 at \$65 million and the total economic impact at \$195 million (see The Farming of Atlantic Salmon in Maine at www.umaine.edu/mainesci/Archives/marine_sciences/salmon-farming.htm). The value dropped in 2002 and 2003 because of losses from diseases and winter-kill. Two new independent economic evaluations are in progress at this writing

¹² Oyster cultivation is estimated at approximately \$2 million. The Portland Press Herald, July 15, 2003, reported the harvest of mussel cultivation to be worth approximately \$7.5 million.

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Growing World Demand

The world's population and its demand for protein will continue to increase. Seafood is the protein of choice for many by taste preference and for good health. The capture fisheries of the world are not increasing and it is likely that they will decrease for the foreseeable future. The only arena of potential increase of fish protein is shellfish and finfish aquaculture. The practicality of expanded aquacultural seafood production is not in doubt. Its production potential has been variously estimated, but there is no question that it is substantial. The Food and Agricultural Organization (FAO) of the United Nations projects aquaculture production to double in thirty years, reaching about 80 million tons (Tacon 2003) or roughly equal to the world's wild fish landings. Aquacultural growth worldwide is projected by FAO to increase more than any other animal protein product.

There is some debate about the potential for growth of salmon aquaculture in Maine, depending largely upon the availability of suitable sites, but there is certainly potential for significant growth in shellfish culture and perhaps for other finfish species, and for seaweed culture.

Investment Potential

The industry in Maine enjoys strong investment potential if investors are persuaded that the industry can be accommodated on the coast. The coast of Maine is a generally favorable environment for finfish and shellfish production, and it offers a capable, dependable labor force. The Maine coast is located closer to major and expanding markets than any other region producing farm-raised salmon. Aquaculture can produce significant, sustainable, and predictable quantities of seafood without the destabilizing uncertainties of traditional fisheries management and its ever-changing regulations.

Viability

Aquaculture is now more than twenty years old in Maine and considerably older elsewhere. Even in Maine where the practice is relatively youthful it is beyond the experimental stage and well into the viable production stage. But the rather recent rapid growth of aquaculture in some areas of Maine has raised a variety of concerns about its impacts. The concerns appear in some part to be the result of novelty and uncertainty. The Damariscotta River has witnessed shellfish aquaculture for more than twenty years. The development and practice of aquaculture in the river is now relatively noncontroversial, according to the director of the Damariscotta River Association, and apparently is accepted as one of the normal activities on the "working" river. No adverse environmental consequences have been reported. Aquaculture in the Damariscotta River seems to have grown beyond the controversies that occurred in its early years. There seems to be a maturation process at work there. Whether that process will be the pattern elsewhere in Maine, where the industry remains controversial, remains to be seen.

Responsiveness

Some members of Maine's finfish aquaculture industry perceive it to be "the most heavily monitored

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• industry in the United States."¹³ Whether true or not, the salmon industry, through its trade association, has responded to real and potential environmental and "housekeeping" issues by developing codes of containment and of practices, and undoubtedly continues to learn from and correct past mistakes. The industry is very aware that it must maintain good housekeeping practices.

Aquaculture's Weaknesses

Controversy

Aquaculture is controversial in many regions of the world; this general concern is used to support and reinforce concerns about aquaculture lease applications and practices in Maine. It is noteworthy that no Maine group states its opposition to the concept of aquaculture in Maine, but only to specific projects and the terms of their operations. At nearly all aquaculture lease hearings a wide range of concerns are voiced. The principal target is the finfish industry, but shellfish lease applications are similarly controversial. Some of the expressed concerns are not justified,¹⁴ but the industry has not been effective in presenting the facts of its operations.

The concerns in Maine may be based in part on emotional or aesthetic opposition to aquaculture or to its visual impact on what is often characterized as "the wild and scenic" character or resources of the coast of Maine. This is a legitimate concern (although the coast itself can hardly be considered "wild"), and because of its subjective nature this issue would be a challenge to administer by regulatory agencies. The issue of visual impact could be of particular concern for the future of the industry if applied as a reason to deny a lease application because there are very few parts of the coast that would not be described as scenic.

There are of course concerns about aquaculture that have substance and are part of the controversy. These will be considered below.

The level of controversy in some areas now is such that it is perceived by some to threaten the very future of the industry in Maine. Indeed, there is a strong belief within the industry that that may be the intent of some concerned people – and the perception has caused increasingly hostile and bitter attitudes among some coastal residents.¹⁵ For this reason it is important to try to understand the nature of the controversy.

Traditional capture fishing is widely accepted as a time-honored livelihood in Maine and an integral and essential part of the coast, but fishermen are increasingly threatened with a decreasing resource base. Whereas in earlier years Maine fishermen had access to perhaps a dozen species of value, there is now only one significant fishery in our coastal waters – the lobster fishery – and that last remaining resource is under ever increasing pressure. The disappointing landings in 2003 through August reinforce fears of the fragile status of the lobster resource. There is growing fear of its decline. Some families with generations of fishing traditions therefore look to aquaculture as a means of continuing to earn their livelihood from the sea and as a way to relieve excessive pressure on the lobster resource. This was in fact a motivation for the fishermen of one coastal community to support a finfish farm in

¹³ The Maine Aquaculture Association notes that Maine's marine farmers must comply with up to sixteen federal regulatory acts and must obtain between five and fourteen federal and state permits, depending upon the type of farm operations, before they can begin operations.

¹⁴ One concerned and active organization lists fifty objections to high-density fish farms. The organization's secretary has noted that many of these objections are controversial, undocumented, or incorrect. See Rockefeller 2003.

¹⁵ One commentator on the draft of this paper "found the framing of the issue in adversarial terms to be unfortunate." He is quite correct; it is unfortunate. Regrettably, there is little doubt that the controversy is at times adversarial.

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Defensiveness

Part of the controversy now is the concern that aquaculture is a "dirty" industry, posing unacceptable risks and hazards to the environment, wildlife, the traditional fishing industry, public health, and aesthetics and view-sheds of the Maine coast. It is true that there have been real and well publicized problems within the finfish industry related to diseases, winter-kill mortalities, escapements, and other concerns. There has been publicity about other issues¹⁶ that are marginally or negligibly related to the Maine industry. All are cited as reasons for concern. Maine's aquaculturists seem to be on the defensive under the burden of these charges, to the point that those employed by the industry – and those who hope to be – fear that investment capital may be withdrawn from Maine and the industry shut down. And aquaculturists report that they are losing valuable employees in part because of the uncertain future created by the controversy. Pessimism prevails within the industry.

Those concerned about negative impacts of aquaculture invoke many reasons for their positions, but maintain that they are not opposed to aquaculture as such, only to the way in which it is practiced. Some concerned groups propose conditions that may be impractical,¹⁷ or uneconomical, or might jeopardize the future of the industry.

For example, there are repeated calls for aquaculture leasing decisions and the practice of aquaculture within the context of Bay Management, a concept implemented elsewhere in the world but for rather specific and narrowly defined purposes – purposes that are much more limited than have been proposed in Maine. Proponents of Bay Management have cited as an example the concept as practiced in Ireland – C.L.A.M.S.¹⁸ But C.L.A.M.S. is for the explicit purpose of enhancing aquaculture by coordinating industry responses to common environmental or biological problems.¹⁹ It is not a licensing or regulatory entity. Proponents of the concept in Maine believe that it could be expanded to equitably involve all "stakeholders" (not yet identified) and result in comprehensive planning and management of social, cultural, economic, environmental, and aesthetic resources, and to determine whether or not, and how, aquaculture would occur in local areas. Legislation (LD 1088) proposed in 2003 to study the concept was not enacted.

¹⁷ The first draft of this paper used the word "utopian" here which my dictionary defines as, i.e., "any idealistic goal or concept for social and political reform." I thought it appropriate, but a number of commentators objected, so in deference I have substituted "impractical."

¹⁸ Coordinated Local Aquaculture Management System.

¹⁹ The Maine industry has adopted such a bay management plan for Cobscook Bay.

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The recently appointed Aquaculture Task Force is charged with considering the Bay Management concept. It is not clear with respect to aquaculture leases that the concept could legally substitute for or would be a significant improvement over the current adjudicatory process.²⁰ It would undoubtedly be a much "messier" process than the present system – whatever one thinks of the present system. It has been charged that the concept as proposed in Maine would – and is intended to – delegate the decision authority to local interests that do not want aquaculture in their regions. A somewhat different concept has been proposed based upon "nested platforms" which are defined as a council of representatives of different stakeholder groups facilitated by a neutral third party and operating within "institutions at higher decision-making."²¹ Whether this concept would be practical and beneficial remains to be seen.

It has been suggested that there should be a zoning plan stating where aquaculture could and would not take place. The idea may at first thought be attractive; it might appeal as providing a sense of direction, reducing uncertainty, and replacing the current "ad hoc", as alleged by critics,²² practice. But zoning would almost certainly foreclose aquacultural opportunities in the future that are not now apparent. Aquaculture is in its infancy; there are a number of species that could be cultured, not just for human food, and there is a diversity of possible growing environments on this varied coast. Zoning could lead to undesirable crowding of farm sites with increased risks of diseases and other biological and environmental problems. Such a zoning plan could also lead to a "gold-rush" phenomenon within the "open areas", exacerbating the current controversy. Some of the applications within the "rush" very likely could be purely speculative and some would be ill-conceived – neither to the advantage of the state.

It has been suggested that aquaculture should be practiced only in contained facilities on land, an idea that was explored and abandoned in Maine years ago. New technological developments may make it practical for broodstock maintenance or finfish hatching (for strictly marine species) on land facilities, but a Scottish report (Anon. 2002) notes that the capital costs for land-based grow-out facilities are "particularly high and are not justified...and there is an inherent risk of biomagnification of disease in recirculated sites." A second Scottish report (Anon. 2003) notes that "since it [land-base aquaculture] is calculated to add significantly to production costs in comparison with cage ongrowing, so much so that it is fundamentally uneconomic, it is regarded as generally unsuitable for the replacement of cage production of ongrown fish for human consumption." Although stated in general terms, these conclusions may refer specifically to Scottish conditions. Land-based aquaculture is practiced elsewhere in Europe. Even so, it is likely that land-based operations in Maine could be expensive for land acquisition and for winter heating requirements. A criticism in Maine is that aquaculture is dominated by foreign owners. An insistence upon capital-intensive land-based aquaculture, if it were technically or economically practical, could eliminate the opportunity of many Maine residents to become aquacultural entrepreneurs.

These kinds of proposals – Bay Management, zoning, and land-base aquaculture – may appear to address concerns about the practice of aquaculture, but may be unrealistic and impractical or cost-prohibitive.

²⁰ There is much public misunderstanding about the adjudicatory legal process. It is often accused of failing to protect the public interest. This perception is unfortunate. Properly understood and used, it is the best available protector of the public interest. The Department of Marine Resources and the Attorney General's office should develop educational materials for the use of all participants in the aquaculture leasing process. In the meantime, see the brochure "Marine Aquaculture: How the Public Can Participate in the Leasing Process for Marine Aquaculture Farms in Maine" available from the Maine Department of Marine Resources.

²¹ The concept of "nested platforms" is described with literature citations in Rockefeller 2003. A few copies may be available from the Maine Department of Marine Resources.

²² The term "ad hoc" suggests a casual approach to the consideration of lease applications. The reality is otherwise.

Further Concerns

There is an element of unreality in some of the concerns expressed about the industry and the adjudicatory process for considering leases. More than one group of concerned people list problems posed by aquaculture that go beyond the realm of rationale concern, for example, aquaculture "create[s] local dependence upon a single industry,"²³ or the adjudicatory process "fail[s] to recognize and accommodate the legitimate concerns of others."²⁴

Among the many concerns is the fear that concentrated fish in pens or shellfish on the bottom will result in environmental degradation because of "nutrient overloading." This of course is a possibility and it has occurred elsewhere in the world, but studies in Maine have found little if any evidence of it (e.g., Sowles and Churchill MS 2003). The Department of Marine Resources (DMR) pre-lease-hearings site evaluation procedures routinely take this possibility into account.

Briefly, three other concerns are diseases, sea lice infestations, and degradation of sea-floors under fish pens. Diseases of course are a major concern to the industry and it modifies and improves its practices to minimize the possibility of diseases. An integrated pest management program has been adopted and is reported to be "highly effective"²⁵ for the control of sea lice. DMR inspects the sea-floor beneath all pen sites semi-annually. Most (about 85%) pen sites show no bottom degradation. Where such problems are found, mandatory fallowing (i.e., no fish permitted) results in habitat restoration, usually in six, but up to fifteen, months. Some sites have never experienced any of these problems. These are problems that are not likely to threaten the future of the industry.

There have been concerns that the aquaculture industry takes great quantities of fish from the sea as a source of food for cultured fish. In fact the industry depends to an ever decreasing degree for such food; much of that source of fish is remote from the Gulf of Maine and would be taken regardless of the future of aquaculture in Maine. This concern ignores the fact Maine's most valuable and traditional capture fishery takes large quantities²⁶ – quantities much larger than used by Maine aquaculturists – of sea fish from the Gulf of Maine for bait, to the point that an increasing number of people fear that the bait industry jeopardizes the viability of the bait fish resource. This in itself is an escalating controversy. This issue is included here because it suggests that there is a double standard of judgment at work – one among a number of double standards²⁷ – concerning the environmental impact of aquaculture in Maine. Perpetuating double standards does not enhance the credibility of those raising the issues and unfortunately diminishes the possibility of serious consideration of legitimate issues of concern.

²³ www.epbea.org

²⁴ Conservation Law Foundation List of Concerns to Be Addressed Through Improved Lease Siting Process. n.d. Unpublished.

²⁵ Associate Professor Michael Opitz, UMO.

²⁶ 220 million pounds of herring are taken each year for lobster bait according to a University of Maine study reported in the Portland Press Herald on August 14, 2003. This is a four-fold increase, according to a DMR estimate, since 1980.

²⁷ Interference with commercial and recreational navigation, serious disease potential, the use of chemicals, noise pollution, usurpation of traditional fishing grounds, loss or destruction of fishing gear and dumping of fishing gear on the bottom or on shorelines, and disruption of sea-floor habitats, among other concerns, are to be found in traditional Maine fisheries. The double standard is that while they are cited as issues associated with aquaculture, there is little or no public concern for these problems in other fisheries.

The Wild Salmon

A legitimate and the most serious concern about salmon aquaculture in Maine is that of a possible threat to wild Atlantic Salmon. Sea-run salmon in Maine have been declining for many decades, quite longer than the presence of finfish culture.²⁸ Aquaculture clearly has not caused the decline, but the concern is that it might in some way cause the demise or prevent restoration of sea-run salmon.

A recent interim report (NAS 2002) by the National Academy of Sciences on the genetics of salmon in Maine offers no clear guidance on this issue. It notes that pen-reared fish compete poorly with wild fish and their reproductive success is low compared with wild fish. The report also notes that despite "heavy" stocking of Maine rivers over the years with Canadian salmon and other salmon not indigenous to the various rivers, Maine wild salmon remain genetically distinct within the various rivers. These facts suggest a question whether in fact pen-reared salmon are a threat to wild salmon restoration.²⁹ The principal concern seems to be that with even a very low level of escapement (much less than one percent) of penfish, the numbers in some not-clearly-defined way could overwhelm the wild fish, now in very low numbers in our rivers. Or that diseases or sea-lice may be transferred to wild salmon. This is an issue that must receive continuing serious attention. It is clearly in both the economic and the environmental interests of the growers to minimize such transfers or escapement. It should be noted that the salmon industry and several private groups concerned with the environment and salmon restoration entered into a formal agreement for cooperative efforts to protect sea-run salmon, including containment and marking methodologies of farmed fish. Escapements in recent years have been greatly reduced. (Is it possible to eliminate them?). And it is equally in the self-interest of salmon growers to minimize other potential problems that might jeopardize restoration efforts.

A recent legal analysis concluded that the Clean Water Act (CWA) and the National and Maine Pollution Discharge Elimination System programs (NPDES and MEPDES) can provide sufficient protection for wild salmon (Fleming 2002). The industry is greatly concerned about the impact of Endangered Species Act and MEPDES, but that concern may be exaggerated. At least one company is learning to live with those requirements. It is likely that the industry can adjust to their requirements, but the industry is concerned, nevertheless, that the Acts may be the cause of continuing litigation. One might here recommend the Precautionary Principle³⁰ on behalf of wild salmon. If one were to do so, one would also have to look at other industries near Maine's salmon rivers. Exercise of the Precautionary Principle in an equitable and truly effective way would have wide-ranging implications. Finally, on this question of threats to wild salmon, one would keep in mind that the possible cultivation of non-anadromous species on the Maine coast would pose no such threat.

Aquaculture production in Maine is vulnerable to occasional adverse environmental conditions. The

²⁸ There is a general assumption that anthropogenic causes have been reducing sea-run salmon in Maine, but it has also been suggested that Maine salmon, near the southern limit of their natural range, are retreating northward because of natural environmental variations - a phenomenon akin to the natural fluctuations in abundance of Gulf of Maine shrimp.

²⁹ A considerable peer-reviewed literature exists concerning interactions between farmed salmon and wild salmon in Canada, Norway, Ireland, and Scotland. The final National Academy of Sciences-National Research Council report on sea-run salmon and aquaculture in Maine, expected in late 2003, no doubt will include the most important references.

³⁰ "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." Principle 15 from the Rio Conference on the Environment and Development, 1992. See also Anon. 2003: "the [precautionary] principle [is] that all responsible parties should act prudently to avoid the possibility of irreversible environmental damage in situations where the scientific evidence is inconclusive but the potential damage could be significant."

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best strategy to mitigate this reality, of course, is the cultivation of a diversity of species.

Aquaculture's Opportunities

Only five species (salmon, oysters, mussels, clams, and seaweeds) are in significant aquacultural production in Maine at this time. Probably at least a dozen finfish, shellfish, and seaweed species could be cultivated in the foreseeable future.

Only from the air can one fully appreciate the very great extent (it is tempting to write the "immensity") of Maine's coastal waters. Only from the air can one appreciate the minute fraction of the coastal waters presently occupied by aquacultural activities and the negligible impact they have on navigable waters and traditional fishing grounds. And only from the air can one begin to appreciate the great extent and diversity of marine habitats along the coast. Such a diversity of habitats suggests the possibility of cultivating considerably more than the few species now under cultivation, whether by cage culture, raft culture, submerged cage culture, suspended rope culture, bottom culture, or technologies not yet conceived.

The coast of Maine undoubtedly has habitats favorable for a variety of species. This potential diversity of species could lend greater stability to total production and marketability of the products, buffering the industry against economic and environmental variabilities. With this growth potential comes an opportunity to become a center for the development of innovative technologies and methodologies of cultivation – a growth industry in itself. And it offers the potential for development of spin-off products such as the current use of salmon blood products for medical research. The industry could be developed as a compatible tourist attraction providing further diversification and strength to the Downeast economy. Even now tour boats and kayakers visit salmon farms to watch the fish jump in the cages.

The larger opportunity here is that in addressing the confrontation surrounding the aquaculture industry, Maine may recognize that it ought also to address the growing tension surrounding other inevitably competing uses on the coast.

Aquaculture's Challenges

Accommodation

The challenge is to find accommodation among these competing interests. The solutions to other challenges to the growth of aquaculture³¹ – largely technological and managerial – will almost certainly follow with the maturation of the industry if this primary accommodation can be found.

The Maine industry increasingly expresses its disenchantment with the current environment of statutory and regulatory uncertainty, social hostility, and ever-present threat of litigation. The loss of the aquaculture industry, whether by default or by deliberate choice, would do nothing to attract, and could possibly discourage the location of, any other substantial and "clean" industry of comparable magnitude to coastal Maine.

A number of concerns expressed about aquaculture in Maine have little substance or validity; they could be set to rest by effective exchange of information about the industry. Other concerns have substance. The industry has developed and adopted a standard Code of Practice for finfish aquaculture

³¹ Such as diseases, sea-lice, and environmental impacts on the bottom.

Some people within the industry believe that an industry presentation of the facts would be construed as special pleading; they believe that a persuasive case would have to be presented by an informed, neutral third party. But who would be that third party? Some people seem to believe that DMR, or the "State", is prejudiced in favor of aquaculture. In fact, DMR seems to have dealt rather evenhandedly over the years with aquaculture applicants, granting leases to some and denying a not inconsiderable number of leases for a variety of reasons.³²

A Credible, Neutral Source

Maine will not deliberately nor wittingly abandon this industry, so appropriate for our coastal waters and of such potential magnitude for the benefit of Maine residents and for the protein needs of the world's growing population. But Maine could lose it by default if not by design. The essence of the problem seems to be that of "fitting in" the industry along an increasingly crowded coast that attracts an ever increasing number of people who resist deviation from their vision of what the coast ought to be.³⁴ The state could lose the industry if the public does not realistically understand the weaknesses, the strengths, and the potentials of the aquaculture industry.

³⁴ 17 MRSA 2807, which has to do with visual impact, was enacted in 2001 to protect the commercial fishing industry for exactly this reason.

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Public Education

It has been proposed that broad public education is necessary to set aquaculture in a context for informed, responsible, and objective public policy formulation, for it is quite possible that if the State of Maine does not articulate its policy on this industry, it may well lose it whether it wants to or not. Public education about aquaculture has been characterized by a neutral and informed observer as "hugely important." And there is little doubt that education could do much to reduce the social tensions permeating this issue. But there may be a core of people irrevocably opposed to aquaculture on our coast. It may be that no educational program would change their views and their opposition, but public education could minimize their influence.

The matter of public education is a larger issue than that of disinterested, neutral persons objectively describing the factual nature of the industry. It must encompass not just facts alone, but also the life styles and aspirations of all coastal residents of Maine. The question, then, of who could credibly and objectively conduct the public education project becomes more difficult and critical.

"Fitting in" would require a high degree of respect and accommodation among industry advocates and those with concerns about industry impacts. The latter must respect the right and desire of coastal residents to earn a decent, meaningful, productive livelihood and the development of economic opportunities appropriate for the coast. Industry advocates must respect (through noise abatement, good housekeeping, light attenuation, and similar measures.³⁵) the defensive, tenacious, and profound attachment of seasonal and year-round residents to an environment and a way of life found rarely apart from the coast of Maine. (One shellfish aquaculturist is attempting to develop submerged oyster rafts to minimize visual impact.³⁶) And industry proponents must be diligent about minimizing adverse biological and other impacts upon the environment.

Concerned people must recognize that whereas aquaculture may impinge upon their favored perception of coastal Maine, there can be no doubt that the rapidly changing social circumstances of the coast have to a significant degree affected the access of fishing families of Maine to shorefront access and to the coastal waters themselves – essential for the continuation of this generations-honored tradition that shapes the soul of coastal Maine.³⁷ Mutual accommodation is the only solution to this tension.

The visual impact of aquaculture may be the primary concern of many people; this is a legitimate concern. There have been examples of industry neglect of its responsibility to respect this concern and to mitigate its visual impact. It is in the interest of all to protect the special character of the Maine coast. It is perhaps unfortunate that people who have that legitimate concern for visual impact may try to disguise it or to reinforce it by professing many other concerns – some of them peripheral or without substance – which may only obscure and divert discussion away from important and basic concerns. It would be more productive for resolution of the controversy if the issue of visual impact were addressed forthrightly, with the recognition that it may be the most important and most difficult concern to be managed by the industry and by regulatory agencies. Indeed, DMR recognizes and continues to attempt to manage this important but fundamentally subjective issue (Fisk MS 2002). The Department of Environmental Protection has adopted procedures for addressing this issue on matters under its jurisdiction. There must be continuing efforts by all parties to resolve this question. In the end these are issues to be decided not by facts alone but by mutual commitment to the preservation of a subjectively and traditionally defined way of life in the broadest sense that respects and accommodates a variety of

³⁵ A number of these concerns were incorporated into Maine's aquaculture lease statute in 2003.

³⁶ The University of New Hampshire is experimenting with submerged fish pen cages.

³⁷ Governor John Baldacci recently formed a Working Waterfront Coalition to address this problem.

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physical and psychological needs among people who share one aspiration – a better coast of Maine that offers a rewarding future for all its residents.

New Ways of Thinking

Is Maine morally obliged to contribute to world protein deficits and demands by development of its aquacultural potential? Whether so obliged or not, the inexorable increase of demand for animal protein almost certainly will repeatedly raise the issue of increasing aquaculture production on our coast. Maine would be advised to anticipate that development and develop a policy for the orderly rather than haphazard and confrontational development of that eventuality.

Will Maine recognize that a clear, explicit policy is needed to guide coastal development as "competing" uses increase in a more crowded future?

How will Maine develop an objective, fair, credible policy-formulation entity and mechanism? Maine's newly formed Aquaculture Task Force may find a way to do this.

Would Maine, if consensus were not possible, consider a policy that deliberately favors one interest to the disadvantage of another? With present pressures on the coast, it seems inevitable that Maine will experience that outcome even without an explicit policy; the absence of a policy can result in the same outcome – and it carries a substantial risk that it would not be an outcome that Maine people of whatever persuasion would choose.

The Need for Policy Development

Maine must adopt an explicit policy for its wealth of coastal waters that makes clear that a diversity of legitimate interests and aspirations shall be accommodated and balanced. The policy must be substantive with clear guidelines – performance standards – for implementation of the policy, and it must be endorsed by the Legislature and the Governor.

Coastal Conflicts

The confrontation among those involved in the controversy over aquaculture is part of a larger problem on our coast. There is growing demand among competing uses for finite and shrinking resources. Escalating land valuations ("overly inflated destructive real estate prices"³⁸) drive out low income families with generations of history on the coast. Coastal access by traditional fishermen is an increasing problem. Harbor mooring sites are in short supply, and private moorings, used infrequently, are increasingly usurping anchorages outside of traditional harbors. Fishing operations encroach upon navigable waterways. There is no state policy that addresses these and other ever-increasing competing uses of the coast.

The social tension surrounding aquaculture is the immediate and most urgent coastal policy issue; it is the "flash point" that Maine must address. An explicit and definitive statutory statement of policy would seem to be essential if aquaculture is to "fit in" and have a future on this coast. Aquaculturists have expressed the conviction that the continuing flood of proposed adversarial legislation, or increasing confrontations at lease hearings, means that whether a particular legislative bill passes or fails, or a particular lease is granted or denied, the aquaculturists lose. They lose in the sense that they cannot afford continuing legislative or legal battles, or that potential investors will abandon Maine, turning to more receptive, less adversarial environments. Some aquaculturists believe that is the intent of many legislative proposals. Legislative proposals would likely continue in the absence of a clear state declaration of its position on aquaculture.

³⁸ Editorial, Fishermen's Voice, September 2003.

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Clarifying Expectation

The value of a state policy is in large part that it would notify all those with an interest in aquaculture of what to expect; it reduces the fundamental uncertainties that are presently the primary concern of both sides. Policy informs both sides that neither will nor can "win" or "lose", but that each must find a way to accommodate the other. A definitive policy would inject much-needed stability into an increasingly acrimonious controversy. Such a policy would reaffirm that the Maine coast is a "working" coast.

The Elements of a Policy

An adequate aquaculture policy, most importantly, must state whether or not it is the desire and intent of Maine to encourage and sustain an aquaculture industry under responsible operating standards. If that is the state's intent the policy should include:

1. Stabilization of the legislative-regulatory process. No human enterprise can prosper or approach its full potential within an uncertain or unstable environment. An aquaculture policy would reduce legislative-regulatory uncertainties by establishing performance standards for the industry within which the propriety of any new legislative or rules proposals could be evaluated.

2. A public education program. A commission of credible, informed, neutral persons should be established to develop and put into effect a program of public education that disseminates factual information about aquaculture, the leasing process, the role of the public within that process, and the practice and regulatory oversight of the industry. The purpose would be to insure that discussions of and actions related to aquaculture proceed in a rational, thoughtful, relevant, and focused manner. The commission should also review and make recommendations to the regulatory agencies concerning mitigation of visual impact of aquaculture. The commission should be jointly funded by the Legislature and the industry.

3. An economic or investment program. There is not unanimity within the aquaculture industry whether an economic incentives plan is important or desirable. But the development of a state policy should include a thorough consideration of the potential benefits of such incentives and whether the state has a favorable investment climate. If Maine wishes to encourage greater Maine ownership of aquaculture enterprises, such incentives may be appropriate. Apprentice programs for technological training, low interest loans, and marketing and sales cooperatives might enhance the possibilities for residents without large capital resources to enter the industry.

4. An innovation-development plan. The great extent and diversity of the Maine coast suggests a great potential for aquacultural development. Thirty years ago it was suggested that aquaculture could be Maine's most valuable industry (Anon. 1971). That may have been hyperbole, but the actual potential could be substantial. We will never know unless the people of Maine recognize and take this possibility seriously – and make a commitment to the exploration of the potential. That commitment is presently lacking. The state should develop and adopt a research and development plan that fully explores the possibilities for aquacultural development – new species, new habitats, new technologies, new markets, and new opportunities.

Whether within such a policy or not, the State of Maine must insure that its agencies interpret, administer, and enforce federal and state statutory and regulatory criteria – that is, performance standards – for aquaculture professionally, credibly, and equitably.

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Appendix G: Maine's Fisheries

By James Wilson
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Summary

We face a fundamental, overriding problem in our fisheries today – a governance process that works against fishermen's collective, rational interest in conservation. Decisions about conservation are usually avoided because no one can capture the benefits and, in addition, because we don't have (and probably never will have) the scientific ability to know exactly the right thing to do. The result for the State has been the effective loss of most of its fisheries and impoverishment of the ecosystem of the Gulf of Maine. Even the fisheries that remain viable, such as the lobster fishery, are continually at risk because of the loss of ecosystem structure. We have to address these issues. That process has begun in the lobster fishery but it needs to be strengthened there and adapted and expanded to our other fisheries. If we don't do this we will never solve the conservation problem and are very likely to have no viable fisheries in the near future.

Background

Knowledge and Governance in Complex Systems

Maine's fisheries are a diverse group of industries that are biologically interdependent, but economically almost independent. They are all directed at the capture of publicly owned resources found in either the territorial waters of the State or in federal waters beyond three miles. Sustainable use of these resources requires a careful balancing of human and biological activity. This requires good science combined with meaningful restraints on fishing activity.

Over the years a complicated system of state and federal regulations has consistently failed to produce this balance and, equally important, has failed to produce an atmosphere in which scientists, policy makers, and fishermen have learned how to better manage the resource. This is especially true in the groundfishery. Almost all our fisheries are in much, much worse condition than they were, say, fifty years ago; and it is undoubtedly the case that the entire ecosystem of the Gulf of Maine has been disrupted and heavily damaged. Perhaps the only fishery whose abundance has been sustained and actually increased over this period is the lobster fishery; good management is at least partially responsible for the long term sustainability of the fishery, but the most plausible reason for the current, historically high levels of abundance is the poor condition of the other species in the system³⁹.

There are, of course, innumerable reasons offered for this consistent failure. As is usually the case, most of the blame is placed squarely on the shoulders of the other guy and, as is usually the case, there is some truth to what the blame-sayers say. Federal scientists are firmly convinced their science is right and blame a "lack of political will". Many of those who supposedly "lack political will" are firmly convinced the science is deficient. The small boat

³⁹ This is definitely not meant to imply that management of the lobster fishery is ineffective. The rules in place have prevented the destruction of the fishery. Given the extremely poor record in so many other fisheries throughout the world this is no small accomplishment.

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fleet believes the large boat fleet has decimated the resource, and the large boat fleet busily calculates how many fish the small boats ‘really’ take. And the game continues, seemingly without end. The important question is why our management institutions create this kind of dead-end process.

The short-term benefits from the game – being able to convince the powers-that-be that your interests need to be protected – are usually tangible and real to all the players. Fishermen fend off more rigorous fishing restrictions, bureaucrats preserve their policies and positions, scientists defend the theories they’ve espoused for years, and so on. The system gives no one a strong incentive to make the investment in fundamental changes that might conserve the resource. Fishermen who do try to act in a way that conserves the resource learn that their conservation efforts are quickly cancelled out by others and, even worse, that the system is likely to punish them with less future access to the resource (because their use history is proportionately lower).

The kind of political dynamic this creates is well recognized. It usually results in very little or no action until a full-blown crisis is upon us. Because of our inability to act, these crises seem to arrive with great regularity. Running through this paper is a consistent policy theme – that our major problem is finding a way to end this game. More formally, this problem has come to be known as ‘the governance problem’.

We should not underestimate the difficulty of ending this “game.” Not only are the incentives for change very weak, but in a very basic way the game occurs because science cannot give us unambiguous evidence of what is necessary to produce a sustainable balance. Managing fisheries and ecosystems is not like building bridges. When we build a bridge we can rely upon the experience gained from building thousands of other bridges. We know the strength of steel and concrete, and can reliably predict the result of building one way or another. And, more importantly, this knowledge gives us the confidence to hand the problem of building bridges to a group of experts (at least the technical part). This removes from the collective decision process a potentially difficult and contentious set of decisions.

But the important components of marine ecosystems are not like steel and concrete. These systems are complex and changing. They are difficult and costly to monitor. Consequently, it is nearly impossible to predict the outcome of our own activities. Even after the fact, it is almost impossible to learn (except in the most broad way) the connection between the current state of the system and our past actions. As a result experts in fisheries, unlike bridge engineers, can’t acquire the confident knowledge and the credibility that accrues from long and well-known track records. Scientists cannot give us magic numbers or silver bullets. Their top-down recommendations are always received with skepticism and rarely implemented. When these scientific circumstances are coupled with a political process in which the players cannot capture the benefits of tough decisions, the decision process stalls and we continue down the road to depleted fisheries and impoverished ecosystems. The problem is not a lack of good will; it is a systemic issue because no one has the incentive or credibility to change the system.

The typical response to this problem – usually when a crisis is upon us – is to call for a man on a white horse, someone who can make a tough decision and impose it on the fishery. This has never worked. It doesn’t work in democratic societies and, surprisingly, doesn’t even work in totalitarian societies. The political process invariably unhorses the man on the horse and the usual ineffective, pedestrian policies result.

In one form or another, all the State’s fisheries face a significant governance problem. This paper emphasizes the problems in the lobster and the ground fisheries. But the fisheries for scallops, shrimp, clams, worms, sea urchins, sea cucumbers, crabs and others all face their own particular governance problems. Fortunately, the State has pioneered new approaches to fisheries governance – a process of decentralized decision-making called co-management.

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The lobster and urchin councils, although very different from one another, have given us valuable experience in the democratic governance of fisheries. The major question we face in the very near future is whether we can refine and develop this experience so that we can cope successfully with the biological and human complexities of our fisheries.

The Groundfishery⁴⁰

Maine's and New England's groundfishery is in the midst of a very large crisis. The fisheries management process for groundfish has played the game to the hilt, failed to conserve the resource, and nearly destroyed the economic base of the fishery. This crisis is the cumulative result of ineffective Federal regulations that have been driven by and have helped create the current biological conditions. Over the past 20 years these regulations have led to less and less access to the resource, fewer boats, a bias against smaller boats and, now, a tendency to consolidate the remaining access in still fewer boats.

If these trends continue, we may see the transition from a family-owned, market-driven and competitive industry to one characterized by variations of vertical integration⁴¹ and, quite probably, relocation to Massachusetts. At this time, populations of some of the major groundfish stocks appear to have begun a recovery following a period of marked scarcity in the late 1990's. However, even if stocks rebound to their levels of earlier abundance, reduced rights of access to the resource and the probable loss of open and competitive markets for fish and for industry inputs almost guarantee an irreversible transition to a corporate, vertically integrated industry. This is a serious and substantial issue for the State and industry; and it needs to be addressed in the very near future.

Compounding and making these problems more urgent is the fact that the New England Fisheries Management Council⁴² is currently in the process of a court ordered, substantial revision of its management approach – called the Amendment 13 process. The deadlines for this process are rapidly approaching (this fall). This requires that the State and industry decide very quickly (by the end of September 2003) on a strategy for dealing with this on-rushing regulatory change.

A brief history

To understand today's crisis it is necessary to understand the history that has led us to this point. Accounts of the 19th and early 20th century paint a picture of a fishery working off very abundant resources. Until the late 1960s Maine had a vibrant groundfish fishery with processing plants in coastal towns the length of the coast. The fishery was characterized by many small-scale seasonal tub trawling boats, small and large draggers all along the coast (in particular, Kittery, Saco/Biddeford, Portland, Chebeague, Cundy's Harbor, Small Point, Boothbay Harbor, Tenant's Harbor, Port Clyde, Rockland, Vinalhaven, Stonington, Swans

⁴⁰ The term groundfishery refers to boats fishing for cod, flounder, Pollack, haddock, monkfish and other finfish that generally can be found near the ocean bottom. Boats dragging nets (draggers or trawlers) are the most common in the fishery, but gillnetting (using stationary nets that snare the fish at the gills) and hook and line also occur.

⁴¹ Vertical integration refers to a situation in which harvesting, processing and distribution is carried out under a single corporate umbrella. This structure circumvents competitive markets such as the Portland Fish Exchange. Contracting between harvesters and processors or distributors generally has the same effects on competition and market structure and is a close approximation to vertical integration. Sometimes this kind of contracting is termed quasi-vertical integration.

⁴² The Council is a Federal advisory body with seventeen members appointed by the Secretary of Commerce. The marine commissioners from each of the five New England coastal states and the regional director of the National Marine Fisheries Service are permanent members. The secretary appoints an additional twelve industry and at-large people from lists provided the governors of the five states.

Island, Bass Harbor, Bar Harbor, Winter Harbor, S. Addison, Jonesport and Eastport/Lubec) plus several large-scale, distant water fleet operations out of Portland and Rockland.

The depletion of the fisheries of the Northwest Atlantic began as early as the 1950's. It first impacted Maine in a highly visible way in the mid-1960s, when foreign fleets moved into the Gulf. Crashing stocks (populations) in the late 1960s resulted in the loss of most of the small and mid-sized vessels (those with restricted mobility) and the widely distributed shore-side infrastructure that supported them. This initial impact did not affect the large boat Portland and Rockland fleets because their fishing grounds were in Canadian waters, and the species at which they directed their effort – redfish – was not a target of the foreign fleets.

By the mid-seventies the impact of the distant water foreign fleets was so clearly devastating that nations around the world declared a 200 mile economic or fisheries zone. For Maine, the extension of jurisdiction by both the U.S. and Canada carried a mixed message. In the late 1970s and 1980s, the fish rebounded after the foreign fleets were excluded, and there were very positive expectations about the U.S. ability to manage its own fisheries. New boats were built (almost all with one form or another of government subsidy), and a host of new processing operations begun.

But a World Court decision drawing the U.S./Canada maritime boundary across Georges Bank (implemented in 1984) caused the withdrawal of the Maine and U.S. fleet from previously shared, now Canadian waters. The Maine redfish fleet, which had fished far into Canadian waters, and many Maine and Massachusetts groundfish draggers that had traditionally fished Browns Bank, other parts of the Scotian Shelf and the northern peak of Georges Bank, retreated into US waters. This displaced effort was redirected to the U.S. part of Georges Bank and the Gulf of Maine (GOM) and, along with the rest of the fleet, quickly wore down the recovering abundance of the groundfish stocks.

At the same time the new boundary severely restricted the fishing opportunities from many Maine ports, especially those Downeast. Rockland, for example, changed from being an excellent place to fish (in what are now Canadian waters) to a port located in a relatively restricted corner of U.S. waters. In the extreme, boats from Jonesport to Eastport found themselves tucked into a narrow slice of U.S. jurisdiction. Portland and more westerly parts of the State were impacted much less severely by the new boundaries (except for those boats that fished Canadian waters), but shared with the entire fleet the effects of all the effort withdrawn to the west of the Hague Line.

These new geographical facts and the renewed, this time domestic, depletion of the GOM and Georges Bank, were strong contributors to the current crisis in the fishery. The regulatory response to this depletion and to other problems, such as interactions with marine mammals, has further intensified the erosion and near collapse of the traditional social and economic infrastructure of Maine's groundfish fishery.

Regulatory Issues

The New England Fisheries Management Council and the Federal government have responded to over-fishing principally by (1) restricting the number of days-at-sea allowed each vessel, (2) sponsoring buy-back programs and (3) by employing rules that affect how, when and where fishing takes place, e.g., the mesh size of nets and closing of certain fishing areas permanently or seasonally. The current court ordered process known as 'Amendment 13' promises even more restrictive policies.

In recent years, the particulars of these broad policies have become increasingly burdensome and, in many respects, have tended to disadvantage Maine boats. Simply keeping up with and meeting a bewildering and rapidly changing set of regulatory requirements and maintaining a voice in the regulatory process (e.g., attending Council meetings) has become a virtually full-

time job⁴³. Regulatory costs are the same for small vessels and large; they are the same (or nearly so) for an enterprise with one boat and an enterprise with several. As is the case in almost all regulated industries, the fixed costs of regulation tend to seriously disadvantage smaller firms. Small firms cannot afford to keep up with and maintain a public presence in the regulatory process. In addition, fewer days fishing, closed areas, rolling closures, and other forms of restriction have meant that fixed costs have to be spread over lower revenues, resulting in lower profits and diminished economic viability. This has led many boats to switch to other fisheries, especially to lobster, or to simply tie-up.

This disadvantage has been played out in a series of stumbling steps in which regulators, fishermen, and the resource respond to one another's actions. As might be expected, when alternatives are open to the Council there has been a strong tendency to choose the alternative least costly to the majority of interests represented on the Council. That's part of the game. This has created a fairly consistent, but not uniform, bias favoring the methods and requirements of fishing in Massachusetts, New Hampshire, and Rhode Island⁴⁴.

For example, for small and less mobile boats the most adaptive, economic response to scarcity (natural or regulatory) in one fishery is to switch to another fishery; for larger and more mobile boats the best response usually is to move to where the fish are available. This normal pattern of response, tied-in with the new boundaries and tighter regulations, has tended to cause larger boats in Maine to move to the west where the U.S.-Canadian maritime boundary gives them greater flexibility. Most of the smaller boats switched to the lobster fishery, which has been especially healthy since the late 1980s.

Groundfishermen, particularly gillnetters, in Hancock and Washington counties, were especially hard hit by both the boundary and regulatory problems. The boundary problem was further compounded for all Maine boats when the Council passed a rule severely limiting cod catch north of 42° 20' (an east-west line located just north of Cape Cod) and allowing unlimited catches below. The geography of this rule was especially hard on small, Maine based boats, but even the larger boats that chose to continue their operations from Maine ports were severely handicapped because their time spent steaming to the 42°20' line counted against their days at sea.

As the New England Council continued to search for ways to exclude actual and potential effort from the fishery, it created new patterns of participation in the regulatory process. Reduced participation in the fishery by certain segments of the fleet has been accompanied by reduced participation in the proceedings of the New England Council; and, as one might expect, has been accompanied by regulations that increasingly reflect the interests of (or that are least costly to) the style and particulars of operation of the boats that remain in the fishery.

The result has been (what appears to be) the permanent exclusion of those elements of the fishery most affected by location or by the high fixed costs created by Federal regulations. Many boats that switched to lobstering have lost their groundfish permits; many boats have accepted Federal buy-outs; and many that tied up have lost their permits. Furthermore, there are strong pressures within the Council to eliminate the 'latent' or potential effort represented by permit holders who have not been fishing in recent years. Today there are less than a handful of groundfish boats operating out of harbors to the east of Penobscot Bay. Since 1994,

⁴³ The public documents for the Amendment 13 process are over 1,400 pages in length and the document pile will continue to grow until at least May of 2004.

⁴⁴ Maine draggers are not allowed to land lobsters in Maine. They can land lobsters in Massachusetts and New Hampshire. At certain times of the year, late winter in particular, when lobster prices are high and draggers tend to catch many, apparently migrating lobsters, the foregone revenue from not landing lobsters can range up to \$10,000 or more. This creates a strong incentive to land in Massachusetts or New Hampshire. Needless to say, this is an issue that strongly divides the lobster and groundfish industries.

Maine landings of groundfish have declined from 20% to 10% of all New England landings (although total landings are up).

Ownership and market

Since the extension of US fisheries jurisdiction to 200 miles, Maine's groundfishery has been characterized by vessels of a variety of sizes, most of which were single boat (or two and three boat) family enterprises. Since the early 1980s, the Maine fishery has not had any large corporations with boats tightly integrated with corporate processing and distribution operations, as in neighboring Canada⁴⁵. This should not be taken to mean that the Maine fleet is inefficient or technologically backward in any sense; it is simply connected to the market differently. Rather than a corporate command and control process, Maine relies upon the Portland Fish Exchange. The Exchange consolidates the supplies of large numbers of independent suppliers in the context of a highly competitive and open market. It provides an efficient and transparent market mechanism that gives both independent boats and small independent processors the ability to compete effectively with large integrated operations. It gives sellers the advantages of a competitive market and buyers access to the diverse and relatively stable supplies of a large number of boats⁴⁶.

This pattern of family ownership combined with a competitive market is currently threatened by regulatory trends that are tending to force a consolidation of ownership and a shift to contractual, almost vertically integrated sales. Compounding the problem is the growing weakness of supporting market infrastructure. Boat yards that can cater to the special needs of groundfish vessels, appropriate maintenance skills, suppliers of nets and other equipment, etc. are all fewer in number today than just five years ago. What was once a short trip to a local supplier might now be a three-hour drive to the only one left. Larger operations, as a result, are being forced to create their own (especially maintenance) infrastructure, which is another factor contributing to consolidation. In this situation also, a competitive market is threatened and reinforcing the chances of an irreversible change in the economic characteristics of the industry.

The near future

The cumulative effect of biological scarcity and Federal regulation over the last twenty years has been the slow erosion of the economic viability of the Maine groundfish fleet. The same has happened throughout New England, but Maine has been affected much more by the new Canadian/U.S. boundary and by a regulatory bias that tends to reflect the interests of states to the south and west. In the very near future, as the New England Council continues to reduce access to the resource, it will affect the viability of many of the remaining boats. Fixed costs are high; days at sea are few: The result will be strong pressures to transfer or consolidate

⁴⁵ From the 1930s to the early 1980s Portland and Rockland were home to two vertically integrated, industrial fleets that fished exclusively for redfish mostly in Canadian waters. These companies ceased operations when U.S. boats were excluded from Canadian waters. In Canada, after the collapse and closure of the Canadian cod fishery in 1992, there was a fairly rapid transition from vertically integrated, industrial operations to one in which independently owned boats fish under contract to large purchasing/processing companies – an arrangement economists refer to as quasi-vertical integration.

⁴⁶ Evidence of the efficiency of the Maine approach can be found in the prices paid to boats in Maine compared with those in Nova Scotia where there is no effective competitive market into which fishermen can sell; in Maine prices generally range 50% to 100% above those paid to independent boats in NS. This is a margin far greater than the higher transportation, lower product quality and higher processing costs faced by NS firms.

days at sea⁴⁷. These pressures will build, and are seen as inevitable by almost everyone in the industry. The implications for Maine are not good.

These changes threaten the independent, family⁴⁸-owned characteristic of the Maine fishery. It may be possible for a few boats to stick it out and continue to operate as independent, family-owned enterprises. Nevertheless, every boat owner in Maine is faced with stark choices: “Would it be better to sell out now, get the value of your days-at-sea allocation and salvage what you can? Or would it be better to acquire the assets of the boats selling out, especially their days-at-sea, and hang in there for what may be a rough ride into a corporate, vertically integrated world?”

Neither option is good for the people or the economy of the state. Both lead to a long-term consolidation of ownership. In a market with relatively few sources of supply there are strong incentives for buyers to assure access to product through contractual arrangements. The diversion of landings to contractual arrangements and to other states because of infrastructure problems will have the effect of lowering sales on the Portland Fish Exchange. As supplies going through the Exchange diminish, its ability to provide processors with predictably steady supplies will decline, and its prices will become a less and less reliable indicator of true market price. This will increase even more the advantages of contracting which will lead to even less product going through the Exchange and, of course, a reduction in the overall value of the Exchange to fishermen, the State, and local processors.

If the Exchange folds and there is a significant additional loss of essential infrastructure, there will be little economic reason for the Maine fleet to remain in Maine. For those boats that remain in the State, the only way to sell will be through consignment brokers, operating principally out of Massachusetts and New York, or through a contractual, nearly vertically integrated mode similar to the Canadian model. These kinds of market arrangements have characterized the groundfishery in the past. They were the principal reason for establishing the Portland Exchange in the first place. With consolidation we can expect an almost inevitable tendency to move back in that direction.

Paradoxically, the Exchange contributes to the conditions that make both consignment sales and contractual arrangements attractive. The Exchange establishes a public, competitive price that consignment and contract buyers have to match; and it provides independent sellers with the important option of returning to an open competitive market. It is important to realize, however, that if the Exchange folds, independents operating through either consignment sales or contractual arrangements will lose the negotiating strength provided by the Exchange and find themselves strongly disadvantaged in the market.

Resource management issues

To complicate this picture even more, there is a growing scientific discussion about the best way to manage stocks for sustainability. It is possible that the scientific assumptions on which current policies are based may have been at least partially responsible for the long-term

⁴⁷ The problem is so acute that the New England Council recently considered, but temporarily rejected, a measure that would have allowed boats to ‘lease’ days-at-sea (DAS). The idea was that more efficient boats (those purchasing leases) would be able to operate for longer periods, reducing the share of their income going to fixed costs. At the same time, less efficient boats (those selling leases) might be expected to cover most of their fixed costs without having to actually fish. The proposal put no limits on consolidation and would have credited the boat purchasing the DAS with the fishing history acquired during the lease period. The result would have been a strong regulatory bias favoring long-term consolidation of rights of access.

⁴⁸ ‘Family owned’ is used here as short hand for relatively small operations that are not in a position by themselves to influence the market or the resource. In other words, not Tysons or General Foods.

decline in New England groundfish stocks. The discussion is basically about the geographical nature of groundfish stocks.

The traditional view assumes that stocks cover a large area (e.g., GOM cod) and are essentially a single, homogeneous population. An alternative view that is more in accord with modern perspectives of ecological systems assumes that stocks adapt to relatively local⁴⁹ conditions (currents, topography, and so on). These adaptations (either genetic or behavioral) lead to numerous biologically distinct, but genetically only slightly separated populations of the same species (e.g., many subpopulations of cod within a GOM ‘meta-population’⁵⁰) – a heterogeneous population. These subpopulations may mix together at certain times, for example, in feeding aggregations, but spend other times of the year or of their life cycle in different environments to which they may be specifically adapted. It is also true that on a shorter time scale, groundfish are gregarious and may be attached to a particular site for periods of months or years. These patterns of complex population structure are the rule, not the exception, among both marine and terrestrial species. Scientists are increasingly aware that localized natural selection is one of the primary engines that create biological diversity and the productivity that is so important for the fishery.

These two perceptions of the biological environment – homogeneous versus heterogeneous – imply very different management approaches. The homogeneous population assumption is consistent with the current, relatively large scale Federal approach. The assumption of a heterogeneous, subdivided meta-population, on the other hand, implies the need to develop regulations and management institutions that operate effectively at both a decentralized and a larger scale, that is, institutions that more closely reflect the multiple scales and geographical areas important to the biological system.

The conservation significance of these differences is best explained in terms of what might happen if we make a mistake. For example, if we actually have numerous subpopulations (of any given species) but assume (as we do now) that we have only a single population, then managing with days-at sea (DAS) or a total allowable catch (TAC) for the entire GOM is almost certain to lead to sequential, or serial, over-fishing of locally adapted stocks. The reason for this is that effort estimated on the assumption that we have one large stock will always be too large for any individual recovering subpopulation⁵¹. Basically it will be nearly impossible to match effort to the growth capabilities of individual small stocks.

This violates a fundamental requirement of an effort-control approach to fisheries management. In this kind of situation, we would likely see what appear to be promising recoveries aborted as effort moves onto local stocks that have much less growth potential than managers assume. In other words, if it turns out that the assumption of a homogeneous population that ranges over the entire GOM is mistaken, then our current large-scale method of management appears to be a very risky, not a precautionary way to manage. Even with

⁴⁹ Local, as used in this context, is a potentially tricky term. What is local depends upon the life history and population structure of individual stocks and this may vary widely. A clam flat might be the appropriate ‘locality’ for clams; the North Atlantic may be the appropriate ‘locality’ for swordfish.

⁵⁰ The term metapopulation refers to a population made up of many, fairly distinct, locally adapted subpopulations. It is believed that these local adaptations allow the metapopulation to efficiently exploit food and other resources in the immediate term and that over the longer term local adaptations are a principle source of resilience for the entire metapopulation.

⁵¹ A fundamental assumption behind effort control approaches to resource management is the ability to match effort (a TAC or total DAS) to the growth capability of the stock. In practice this assumption can be violated if the populations of all local stocks move up and down together. Then it wouldn’t matter whether we thought we had one or many stocks. But when localized stocks move up and down separately, fishing effort naturally concentrates mostly on the stocks that are most productive at any time. But this level of effort (calculated for a large stock) is generally too great for the individual local stock. The most likely result is a continuing series of temporary recoveries with each followed by a collapse from ‘local’ overfishing.

very large reductions in fishing effort we are likely to continue in an impoverished biological regime marked by recurrent economic crises. Neither the public nor the environmental community is likely to tolerate this for much longer.

If we make the opposite mistake, i.e., if we assume we have numerous subpopulations when in fact there is only a single homogeneous population, we may unnecessarily develop new decentralized management institutions appropriate to the assumed local nature of populations. We would wind-up putting unnecessary restrictions on fishing in an attempt to maintain local stocks that don't exist. Boats adapted to the current regulatory approach would have to unlearn fishing practices that work well today but won't in a decentralized regime. In other words, this approach, especially if it leads to a 'too-small-scale-approach', could lead to overly conservative and economically inefficient policies.

If, however, the ecological science on which this approach is based is correct, the economic consequences for both large and small boats as well as the biological consequences of moving in this direction are likely to be much better than provided by the current regime. Basically, moving towards a smaller scale of management does not automatically resolve these problems. It is likely to make them easier to solve in a technical sense only if a change in the scale of management is accompanied by an effective governance process. Decentralizing the governance of the groundfisheries will also give the State and industry the ability to more effectively influence regulations, so that they are better tuned to our particular circumstances.

Policy priorities

Federal regulatory processes have proven unable to balance biological and human needs. The result of this imbalance is a death spiral for Maine's groundfish industry.

Regulation and biological scarcity have reduced the number of boats and are leading to a further consolidation of the fleet. As the harvesting sector declines, necessary infrastructure loses its economic base and disappears. Even core market institutions such as the Portland Fish Exchange are endangered. If the Exchange were to fail, a transparent, competitive market would disappear. This would increase even more the incentives for consolidation of vessel ownership, various forms of vertical integration and, very possibly, the physical consolidation of the fleet at a central location in Massachusetts. The Maine economy – fishermen, boat owners, processors, buyers and suppliers – will lose big. There is little reason to believe that the patterns of ownership and market structure created by a transition to a vertically (or quasi-vertically) integrated industry will be reversible, even if groundfish stocks achieve their former abundance.

This situation points to a core set of priority policies that the State should adopt and actively develop. Basically these are policies intended to maintain a viable cluster of economic activity in the groundfishery:

1. First is the maintenance of a competitive market, the Portland Fish Exchange. Without a competitive market, even those boats that might pursue the 'industrial' route will find themselves in a seriously disadvantaged position. Small boats unable to contract with substantial buyers will be forced to sell by consignment which is always a risky and unfavorable way to sell. In both instances, the node of product consolidation will shift more strongly to the south, and processors will have an increasingly hard time obtaining product without going (expensively) to the point of consolidation.
2. Second is the continued presence of essential industry infrastructure. On the input side, this means unloading docks, berthing space, refrigerated storage, trucking, and shoreside businesses that service vessels and sell ice, fuel, and gear. On the output side, it means processors and distributors. Clearly without essential infrastructure the costs of fishing in

Maine will rise; fishing will be inconvenient and expensive, even for those boats that survive the current period.

3. Third is the assurance of continuing access of Maine boats to the groundfish resources of the GOM. Consolidation of fishing rights in response to the current scarcity of the resource carries with it the very distinct possibility that only a very few boats will retain rights to future access. On the other hand, without consolidation a high percentage of the boats fishing today will have a very hard, probably unsuccessful, time surviving in the next few years. The State must find a way to allow leasing, or some sort of cooperative means for pooling days-at-sea, without at the same time shutting off future access for those boats that wind-up not fishing. If those future rights are lost, there will not be enough economic activity to support a viable economic cluster; the once prosperous groundfish industry east of Portland will not rejuvenate and the overall volume of activity in the State will be inadequate to support a viable service industry, processing, and the Exchange.
4. Fourth, the State must initiate and fight for policies, especially in the Federal arena, that will develop the institutions needed to balance biological and human needs. In particular, this means finding ways to improve the governance process, preferably through decentralization. The “game” has to end; poor resource management has led us to this situation and will keep us there.
5. Fifth, the various stakeholders in the industry must come together and begin to build a consensus, or at the least to have a constructive dialogue, about how they want the fishery to be managed. DMR must develop or search out a mediated forum in which people can discuss these issues openly and without the need to consider their strategic posture in the “game.”

Beyond these core policies, the State and the industry are faced with two starkly different, possible policy strategies. The first is one that acknowledges and encourages the process of consolidation and transition to a vertically integrated industrial structure, while taking whatever steps might be necessary to protect the interests of Maine boat owners, buyers, processors, and suppliers. This is essentially a strategy that accepts the basic thrust that follows from a scientific view of homogeneous fish stocks and the economic consequences that are consistent with that view. It assumes that further reductions fishing effort in the context of the current approach to management will restore fish stocks and the economic fortunes of the industry.

The alternative is a strategy that attempts to retain a fairly diverse, independent family owned fleet and infrastructure operating in a transparent, competitive market. This strategy is consistent with a scientific view of heterogeneous fish stocks. It also will require reductions in fishing effort in order to restore fish stocks. An essential element of this strategy is some form of decentralized, area management for basic conservation and long-term economic viability. *If* this strategy were adopted, it would be necessary to add a sixth core policy:

6. Sixth, the State, industry, and federal regulators must come together and develop some sort of decentralized GOM management unit as part of the current Amendment 13 process.

This is a difficult time for the State’s groundfish industry. The social, economic, and biological conditions in the groundfishery all point to a fundamental turning point. The patterns of access to the resource, the operation of transparent competitive markets, the continuing existence of essential infrastructure, and our scientific approach to management may *all* change dramatically in the near future. The New England Fisheries Management Council will make basic decisions as part of the Amendment 13 process in

the next few months. To successfully influence that process, the State needs to know what it wants to do and get its political ducks in line within the State, with the other New England states, and in Washington. It needs to put in place quickly a consultative process for the discussion of the industry and State's alternatives and preferred policies. The five or six basic policy priorities outlined here need to be fleshed out with specifics. This can only be done through an active and timely consultative process.

The Lobster Industry

The lobster fishery also faces a governance problem; but the circumstances of the lobster fishery are totally different from those in the groundfishery. Stocks are abundant, at historical highs over the last decade; there is a reasonably competitive and efficient market; supply, distribution and processing infrastructure is strong; the industry has a active marketing arm; incomes are very good; the State has put in place an innovative local governance process to complement its own and Federal (really interstate) regulatory processes⁵². Unlike circumstances in the groundfish industry, this layered process of governance is reasonably equitable and responsive to Maine's concerns.

But there are serious concerns that require the attention of both the State and the industry. Two serious external threats are looming on the horizon. The first is the possibility of disease, similar to that occurring in southern New England, or other possible biological events that might lead to dramatic declines in the currently very high lobster population. The second is the possible impact of judicially imposed restrictions on the use of traps pursuant to enforcement of the marine mammal and endangered species acts. Both threats are significant; if they materialize, however, it is not clear that we have the ideas, policies, or governance processes necessary to respond in a timely and rational manner.

Important internal problems also face the industry. Access to the water is becoming increasingly difficult and expensive. Alternative fisheries, traditionally the source of stabilizing income, have almost ceased to exist. Effort (the number of traps, etc.) is far above what is economically sensible and continues to grow; but reasonable and equitable solutions to the problem are not on the table. The State's and industry's investment in scientific research and support is extraordinarily small; and, despite the State's relatively democratic approach to regulation, there are large numbers of lobstermen who stay outside the process.

This and our lack of scientific investment effectively retard a constructive industry-state discussion of possible responses to significant and looming threats like shell-disease. Unlike the groundfishery, most of the problems facing the lobster fishery, even the external threats, may be addressed best by the State and industry. Federal and interstate actions can be important but are not nearly as important as our own.

External threats

From shortly after World War II until the late 1980s, annual landings in the lobster fishery were remarkably stable, ranging from 17 to 25 million pounds. In the late 80s harvests started to increase, and for the last 15 years have been nearly two to three times the post-WWII level. In 2003 landings were at an historic high of 62 million pounds. At the same time, there has been a rapid expansion in the market, mostly through sales of frozen product; consequently, prices have remained stable and incomes have marched up along with the growth in harvests.

The dark cloud in this picture is created by our lack of knowledge of why the fishery is doing

⁵² Lobsters are regulated through the Atlantic States Marine Fisheries Commission (ASMFC - a regulatory compact among the states enabled by Federal legislation), the individual states and, in Maine, by the local lobster zone councils.

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so well. There is good reason to believe state and federal management is effective but even the most vocal proponents of the current management approach are unwilling to claim that good management has produced the current levels of abundance. Good management may have kept us from destroying the fishery; the current abundance, however, is undoubtedly the fortuitous result of factors beyond our control. Everyone's best guess is that significant stresses to the ecological regime brought about by groundfish depletion are the cause of the current abundance⁵³.

If this is true, there are strong reasons to be very uneasy about the instabilities that might be bred by these conditions in the ecosystem. The recent lobster die-off in Long Island Sound and the current explosion of lobster shell disease south of Cape Cod are symptomatic of the abnormal patterns that might be expected from an ecosystem stressed like the GOM. Everyone worries that shell disease might come around the corner at Provincetown and head north. But it is just as likely that some other surprise will occur. Asian shore crabs, for example, have recently invaded the State's inter-tidal waters and appear to be efficient predators of small lobsters. It's not known whether or to what extent this might affect lobster recruitment.

About the only ecological expectation shared by scientists and fishermen alike is the certainty that the current high landings are not likely to persist. The difficult question this raises is this: fishing effort is adjusted to current levels of abundance. If abundance suddenly declines and we keep fishing at the current high level, will we deepen the biological decline and push the population into a long period of scarcity? Too many stocks around the world – cod in Newfoundland is the most well known example – have been driven to economic extinction. We can't rule out that possibility with lobster. The questions are: when will the decline come? how rapidly will it occur? and are there steps we can take now to soften its impact (short of restoring the entire ecosystem of the GOM)?

Almost as worrisome are the problems the industry might face because of right whale interactions with lobster gear. There are, for example, serious proposals to eliminate all vertical lines in the GOM. Here also the magnitude, the timing, and the exact nature of the impact on the industry cannot be known. The courts can generate surprises almost as severe as the ecosystem. The best way to prepare for and respond to these possible threats is not obvious. Experts cannot hand us neat solutions. While the courts are somewhat more transparent than the ecosystem, we can only guess at the nature of their possible actions.

Our only real certainty is that we will be faced with surprising and significant problems like these. We know that our own best interests require some sort of preparation, some way of putting ourselves in a position to be able to take appropriate action when what is appropriate – most likely effort reduction – becomes apparent. Laying the foundations that will allow us to prepare for and respond to these uncertainties is something we can do. Fortunately, those same foundations are what we also need to deal successfully with a host of less serious but important internal problems.

Internal⁵⁴ Problems

By far the largest problem facing the industry is the problem of fishing effort. This is a classic, common property problem. Because no one owns the resource until they catch it,

⁵³ This may seem paradoxical but it may be the case that the loss of groundfish predators or simply the declining competition for food resources has allowed the lobster population to boom.

⁵⁴ What I mean by 'internal' problems is problems that are of our own making and are also subject to solutions through our own actions. These are problems of the sort Pogo encountered when it was realized that 'we have met the enemy and they are us.'

there are strong incentives to race to catch the resource before someone else gets it. When everyone succumbs to this strategy, an on-going escalation of fishing capabilities ensues. If your neighbor increases the number of his traps, you have to follow suit to simply to stay in place; if he gets a bigger boat, better electronics, a faster hauler, wire traps, etc., etc., etc., you have to respond. The collective result is far more traps and bigger, better-equipped, faster boats than might be necessary to harvest the same number of lobsters. This raises the costs of fishing and reduces incomes to well below where they might be otherwise – although boat and trap builders may argue the point. Equally important, the process puts in place a dynamic that threatens the biological basis for the fishery⁵⁵.

Clearly what is needed is some kind of equitable, effective, collective solution. Unfortunately, the clarity of solutions to this and similar commons problems is lacking. As with the disease problem, there is uncertainty about the extent of the problem, especially the biological problem; there is uncertainty about the biological and economic outcomes of any policies we might put in place; and, especially, there is uncertainty about the appropriate distribution of the costs (who bears the burden) of policies we might undertake to solve the problem. And, just as with the threats of disease and/or court action, we have to put in place ways to make these decisions in a timely and reasonable way.

In the last few years, the industry and State have taken significant steps towards solution of these classic commons problems. Zone councils⁵⁶ were established in 1997. They were (or are) a large step in the direction of ending the game. Within a year or so all seven zones voted for trap limits and within four years five of the seven zones had voted for various forms of license limitation. These same items had been on the legislature's agenda for almost twenty-five years without any resolution! The point is that the decentralization of decision-making created the political conditions under which difficult conservation decisions were made. Even if the initiative for these decisions comes from higher up, the creation of a policy dialog at the local level and the ability to adapt broad policies to local circumstances greatly increases the probability of action.

This process is new and far from perfect, and the State can take steps to strengthen it. Realistic solutions to the problems of the fishery have to come from a broad and varied constituency: scientists, fishermen, bureaucrats, and interested citizens. Creating an effective governance process that brings in the knowledge and interests of these constituencies is probably the strongest foundation we can lay for an uncertain future. In practical terms this means:

1. First, more and better science. Science can give us a better understanding of the lobster population and the ecosystem in which lobsters reside; it can give us better ways to observe and monitor the behavior of that system; it can give us more timely warnings of imminent surprises; and it can give us pretty good ideas about the kinds of policies that

⁵⁵ What sets apart competition in the fisheries from competition in other industries is the distinct possibility that fisheries competition might lead, eventually, to the destruction of the resource upon which the industry is based. This leads to the presumption that government or some other form of collective action might improve upon a competitive market result. Scientists and economists have always drawn this conclusion in the context of a particular species, e.g., we overfish cod, or whatever. There is mounting evidence however, that the relevant damage from fishing is the unrealized destruction of ecosystem structure and functions. Sometimes the short hand for this is 'fishing down the foodweb'.

⁵⁶ The coast is divided into seven lobster zones. Each zone has a democratically elected council that can propose changes in fishing rules that have a principally locally impact. Rules can only be changed through a 2/3 vote in a referendum of all fishermen in the zone.

might and might not work⁵⁷. It forms an essential foundation for good management, but we should not expect it to deliver a silver bullet.

2. Science can be especially helpful to local-zone decision making if fishermen are actively engaged in the process of doing the science: in the discussion about science, in at-sea work, and in cooperative research projects. The State and the industry have to acquire the resources necessary to bring science into the zone discussions. Cooperative science has expanded greatly in the last few years; however, the State and the industry have made few efforts to bring the science discussion down to the level of the zones.
3. Finally, DMR, its lobster advisory committee, and the leadership in each zone need to take deliberate and persistent steps to invigorate a public dialog about the science, about equitable ways we can respond to possible problems like shell disease and other downturns in abundance, and ways we can improve the governance process. The zone councils will work well in the face of crisis and will make the State's regulatory role much easier, but only if there is a widespread prior and informed discussion of the issues.

⁵⁷ The industry is extraordinarily tight fisted about support for science. This probably comes about because of the ill-considered claims of silver bullets by many scientists and by the equally ill-considered idea held by many fishermen that the taxpayer should pay for activities that principally benefit the lobster industry. The typical full-time lobsterman lands product worth over \$100,000 per year from this publicly held resource. For this opportunity he pays between \$150 and \$250 dollars per year.

Appendix H: This Evergreen Empire: Maine’s Forest Resources in a New Century

By Lloyd C. Irland
President
The Irland Group

Executive Summary

Maine’s forest resource and forest-based industry have entered this century to find new and troubling dynamics at work. Changes in the corporate world, in financial markets, seemingly insatiable demands for land in southern Maine, and surging foreign competition create new challenges and opportunities. Our traditional views about the Maine woods and the industry, and our established policies are not capable of coping with these new challenges and realizing these opportunities. An entire industry is being re-created before our eyes and we do not have the operator’s manual. We will have to improvise. A few ideas, based on initial consultations, are offered at the end of this essay.

Introduction

Maine’s “Evergreen Empire” of forest has supported families, communities, and major portions of the State’s economy for four centuries. The early years of this new century are challenging the Maine forest resource, its landowners, and its wood-using industry at an intensity not seen since the Great Depression. What are these challenges?

The overall challenge is the very pace of change and the novelty of the new developments. Had anyone predicted, ten years ago, all that has come to pass today, they would not have been taken seriously. Those who have followed the industry most closely are probably more surprised than anybody else! For wood-using industry and dependent communities, the news has more often been bad than good – mill closings and job cuts have become routine. In most instances, few options have been at hand. Mere survival has required drastic measures. Even the participants in all this restructuring do not understand the long-term implications. Internationally, a totally new intensity of global competition has emerged.

After a century of general stability, the recent decade has brought unusual turnover in owners and objectives. Long familiar owners have vanished, replaced by newcomers with uncertain motives and clearly shorter time horizons. All of this is not necessarily harmful, but it is different. The ferment, sales, and turnover in the market supply a steady flow of feedstock for “liquidators” – exploitive operators who buy, strip, and resell large tracts, often after subdividing into large lots. Thus do market pressures tilt time preferences? Lands once owned with pride by a family for generations are stripped and converted to remote lots in a matter of months. The lots are sold to new owners, many of whose motives are simply to hold the lot for a quick speculative gain.

The great challenge is the increasing obsolescence of our intellectual equipment for understanding what is going on and responding to it in the public arena. The pace of change, the new and unfamiliar developments, all create a new market dynamic in which old ideas seem anachronistic, if not perverse. The old notions, the old solutions no longer work. This essay expands on this idea with some more details, organized first around the forest resource itself, and then around the State’s wood-using industry. It then offers some generic implications for policy. To serve this purpose, many details of the forest’s overall story must be left aside.

Maine's Forest Resource

The Maine forest has a complex land use history. In the more settled areas, some 4 million acres of land, once farmed in the late 19th century, are now growing trees. Today, there is almost as much forest land as there was in 1600. Forests in the wildlands have been harvested multiple times for various products. Additionally, in recent decades a strong system of public lands has emerged, including important reserves and other areas protecting ecological and recreational values (see, generally, Irland 1999; Rolde, 2001; and MFS, 2001).

The spruce-fir forests of the wildlands have emerged from the damage of the budworm epidemic and subsequent salvage cutting. It is not yet certain that inventory declines have ended, however, though early indications are hopeful (MFS, 2003). They are only now beginning to show the positive effects of 25 years of investments in thinning, herbiciding, and other treatments on an area of roughly three-quarters to one million acres. These stands can grow at rates twice as high as the natural forests they are replacing, and occasionally higher.

Resource Strengths

1. As a result of intensive management practices, perhaps three-quarters of a million acres of spruce-fir are growing faster than the natural forest would grow. Over coming decades, these stands will significantly improve supply prospects for lumber and paper mills (Wagner, Bowling, and Seymour, 2003). This resource has been termed the "New Forest."
2. Maine has unusually diverse markets for wood. Log grades are highly developed, so that logs can be sold to particular uses at the best price and not sold just as "woods-run" mixed lots. A heavy demand for hardwood pulpwood enables low-grade forests to be managed and even improved by supplying a market for low value wood.
3. The forest grows many species such as sugar maple, spruce, yellow birch, and paper birch that are valued for papermaking. These species also make lumber that is increasingly valued on world markets.
4. The Tree Growth Tax is a major strength for the State's private forest estate. *Note:* challenges and debates over its details are felt by many owners to diminish the needed stability that this tax should provide.
5. Information about Maine's forest resource and wood usage has been materially improved and now matches virtually any other state. One important program is the Annual Forest Inventory System (AFIS) (MFS, 2002).
6. The University has significant strengths in forestry research and training.

Resource Weaknesses

1. Maine's hardwoods are small in size compared to other U.S. states, and of low-grade. Growth rates are low, and past management over a century or more has left a heritage of stand conditions that will take decades to repair. Despite this, it does not appear that log supplies were key factors in the loss of hardwood plants.
2. The spruce-fir forest that has not been subjected to intensive management is in many places slowly recovering, but lacks thrifty growing stock of large trees and is in many areas understocked for good productivity.

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- 3. A major review by the Maine Forest Service found that failure to leave adequate growing stock for future growth is common (Gadzick, Blanck, and Caldwell, 1998). This will not be an easy problem to solve as logging becomes more mechanized and the cost pressures on landowners and loggers intensify. Further analysis using AFIS data will undoubtedly clarify the situation and outlook.
- 4. Debate over biodiversity-friendly management practices continues. Science seems unable to resolve the most contentious issues. Public controversy, federal regulation such as the Endangered Species Act, and other issues create significant public policy challenges for forest ownership.

Resource Opportunities

1. If the investment climate is considered sound, there are many opportunities for management practices that would increase both growth rates and wood quality in forests around the State. Over time, such practices would also increase landowner incomes and the value of the land.
2. Maine has an extraordinary amount of forest land that has been third-party certified as well-managed (6.5 million acres by summer 2003). There is wide interest in pursuing market development efforts to turn this situation into a business opportunity. Governor Baldacci's initiative to boost this acreage will surely draw attention to this (see "Challenges: The Resource" below).
3. There appear to be local niche market opportunities in developing specialized recreational activities and accommodations (e.g. yurt-to-yurt) on private, managed timberlands.
4. The lands that have been immunized against subdivisions and development by easements may provide a supply base for a stable future timber flow, but this is not at all guaranteed. By rough count, these total 1.6 million acres in summer 2003. More projects are under consideration such as the West Branch Project (involving 329,000 acres) and the Downeast Partners Project (involving 312,000 acres).
5. For some years, carefully crafted proposals for "representative reserves" have been on the table. These would retain samples of unmanaged ecosystems fully representing all major ecosystem types in the state.
6. Recent legislative action providing for such reserves on the Public Reserved Lands is a major milestone. It is time to address any remaining as they concern adjacent privately owned lands.

Resource Challenges

Beyond the specifics noted, the forest faces major challenges.

1. Offshore Competition

It is said that from the towers of the Aracruz pulp mill (Brazil), you can see all the forests that supply its wood. This is impossible anywhere in the U.S. This reflects the fast growth rates of the tropics. In Maine, wood travels long distances and carries a huge burden of transportation costs with it into the woodyard.

Planted forests abroad are supplying escalating volumes of lumber to the U.S., with their competitiveness augmented by the dollar's strength (at least up to Winter 2002, Fig. A); for just one example, see Chile (Ch. 5 in UNECE/FAO, 2002). Not only this, but U.S.

competitiveness in a wide range of value added products, from dowels, to furniture, is under siege (Irland, 2003; and UNECE/FAO, 2002, ch. 12.)

Figure A
Coniferous Saw Wood Production

MMbf				
Year	Chile	New Zealand	Brazil	Total
1980	828.5	845.5	3028.6	4703
1990	1224.9	916.3	3359.4	5501
2001	2366.3	1608.2	3307.2	7282

Source: FAO

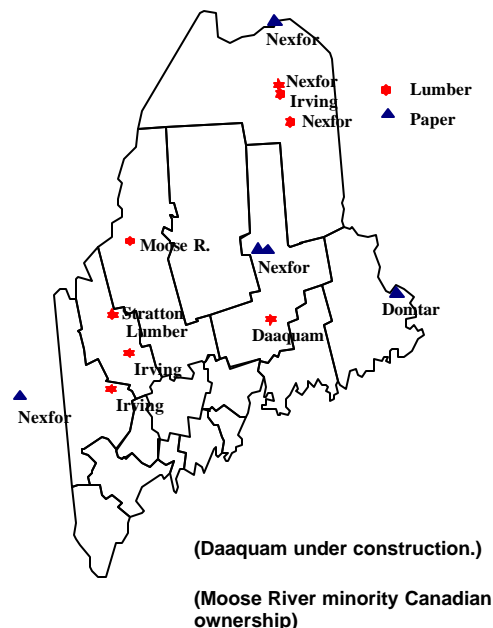
2. Canada Trade

At one time, it appeared Canadian public land managers were planning to reduce the emphasis on wood production substantially and that this would drive down log supply nationwide and ameliorate competition from above the 49th Parallel. This has not yet occurred. Indeed, due to new technology and its aggressive implementation, the Canadian share in the U.S. softwood lumber market remains as high as it has ever been.

There have been opposing waves of cross-border investment. U.S. firms have bought out Canadian businesses, at the same time as Canadian companies have added to positions in the U.S. The net result is not clear nationally. Significantly, half of the Maine land remaining in industry hands is now owned by Canadian paper companies. Canada has emerged as a major capital supplier to Maine's industry (Fig. B).

Figure B

Canadian-Owned Mills



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3. Sprawl and Fragmentation

The Portland metro area led the nation in land consumption relative to change in population according to a Brookings Institution study (Fulton, et al. 2001). Statewide, according to USFS data, there were about 78,000 forest owners in Maine in 1953 and 256,000 in 1993. In 1993, 89.5% of the owners owned 100 acres or less.

These new, more affluent owners have financial strength that past generations of rural owners lacked. These new owners may effectively withdraw large areas from future timber supplies; but we do not know how to measure this. Basically, the land market is saying that it is not financially feasible to grow wood in much of the Maine forest, as the land is too expensive. It is more valuable as a consumption good or a vehicle for speculation. Owners often profess a vague concern for wildlife or ecological values, but rarely do anything specific to foster those values. For many, doing nothing seems adequate.

Sprawl takes different forms, and has different driving forces in different parts of the State. The widening of the Turnpike, for example, will accelerate land use pressure across a wide swath of southern and central Maine. Sprawl feeds on small local governments with minimal growth management capacity. The continued fragmentation of parcels and the epidemic of “No Trespassing” signs create an ongoing need for new ways to motivate smaller owners to manage their forest responsibly, and to provide for public access to these ever-smaller parcels.

4. Growing for Quality

I believe that Maine’s future lies in building on its ability to grow valuable species for quality, in a wild or semi-wild setting. Achieving this on any significant scale will be a major challenge. This is especially true in the face of evidence that recent cutting practices have been leaving behind understocked stands in too many instances.

5. Managing Recreation Uses

Managing conflicts between timber management and development and recreation has proved difficult in many cases. Yet, there are success stories. Better ways to resolve these conflicts could lead to major benefits.

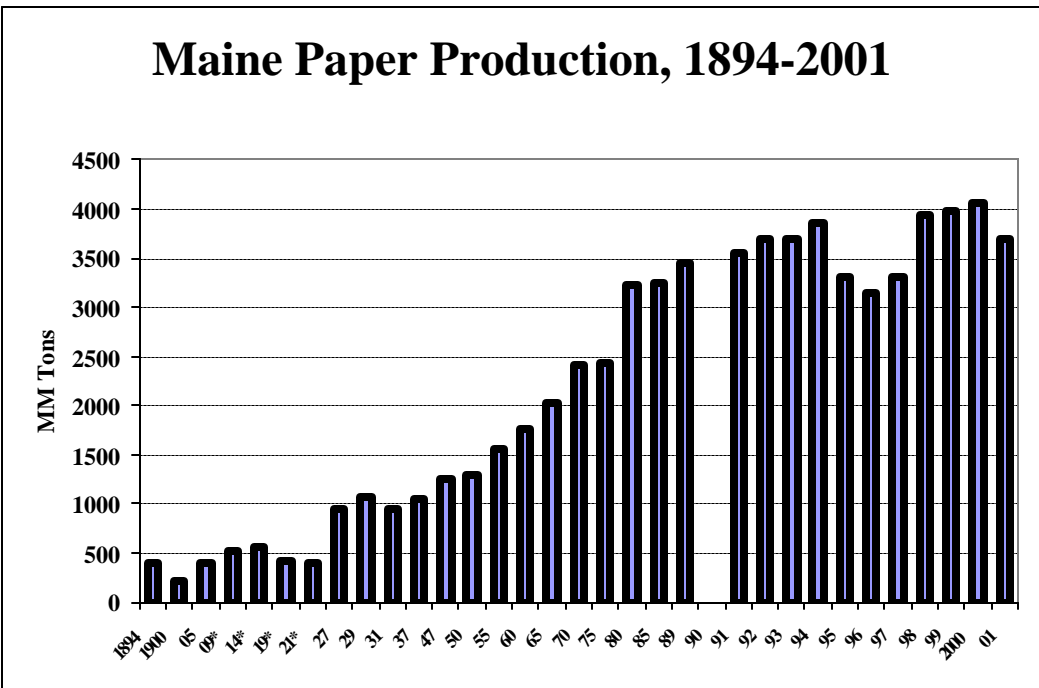
The Forest-Based Industry

Furs, house frames, cooperage, masts and spars, and lumber were among the earliest exports from Maine’s colonial economy. Countless tiny mills, powered by water and even by the tides, produced for export as well as for local needs. In time these grew in size and their operations spread, aided by river log driving, to the farthest corners of the wildlands. In the late 19th century, the paper industry arrived with large newsprint mills based on riverborne pulpwood and the new power of hydroelectric dams harnessing remote rivers (Rolde, 2001). For a generation after World War II, this industry held large wildland properties in what seemed a permanent feature of Maine’s economic landscape (Irland, 2003 and literature cited there). Certainly, landowner identities changed; but often the buyers kept the lands intact and nameplates on mills merely changed. Many communities depended on jobs in the paper mills, dowel plants, small sawmills, and other woodworking plants. Seasonal work in Christmas trees, wreaths, and maple sugar was important to many families. The logging camps of the 1950’s employed literally thousands of workers, including seasonal migrants from Quebec.

At an earlier Blaine House Conference (1983), it was noted that since 1950, Maine’s wood-based employment level had been maintained by a rising timber harvest offsetting the lower level of jobs per board foot cut. It was predicted that the wood harvest would clearly peak out in coming decades, however, and ongoing mechanization would reduce the jobs based on wood. This was an easy prediction to make, and it has come true with a vengeance. Actually, lumber and paper production has held up remarkably well through the 1990’s in the face of these issues (Figs. C & D).

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Figure C

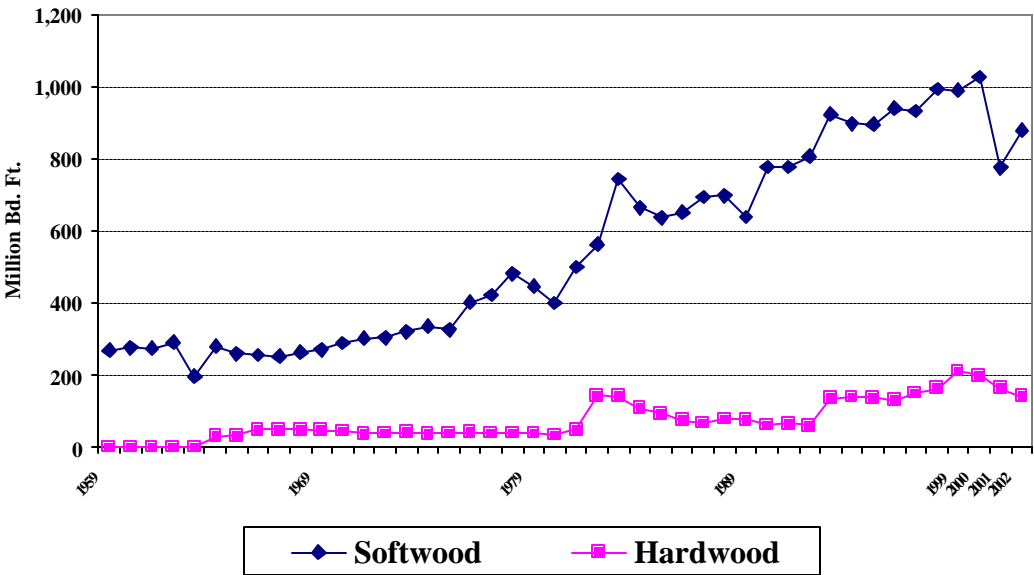


* Partial Data Note: 1990 data missing Source: Irland, 2003, unpub. MS

The industry's social and economic importance has been fully documented (e.g., Irland, 1999; SPO, 2001; and NEFA, 2001).

Figure D

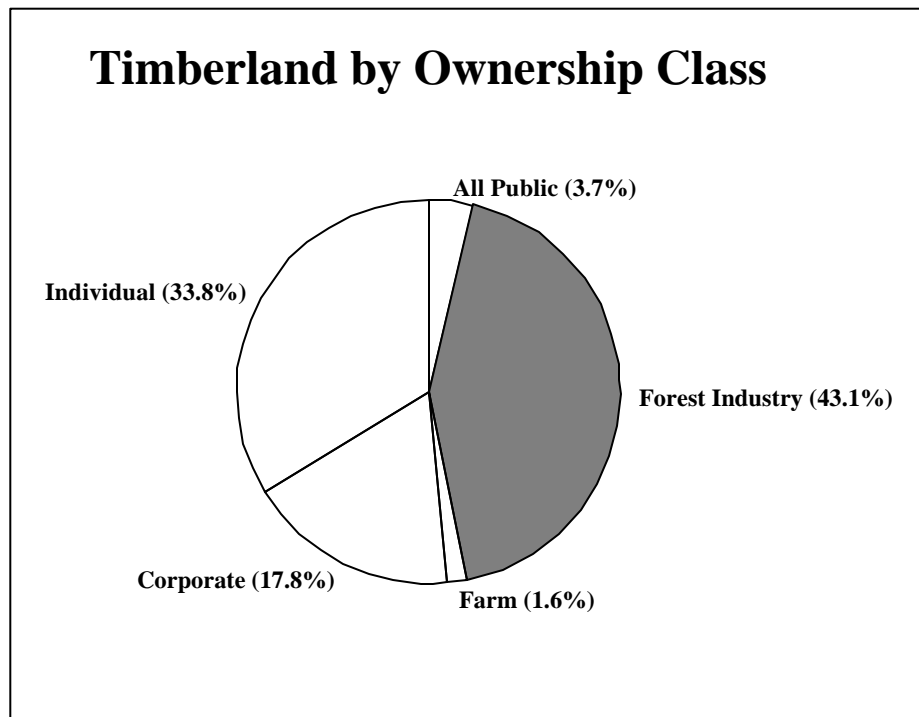
Maine Hardwood & Softwood Lumber Production



Industry Strengths

1. From industry's viewpoint, the largely private ownership of the forest is a major strength, at least compared to western states that are dominated by federal lands (Fig. E).

Figure E - Large Concentration of Industrial Ownership



2. Maine has a well-developed industry infrastructure, the forest is fully roaded, and access to markets is good. It can be hoped that the recent changes in ownership of some mills has placed them in stronger hands for the long run than was the case ten years ago.
3. Existing mills, technical skills, workforce, and infrastructure create possibilities in a nation where the siting of new, "greenfield" plants (newly built plants at entirely new sites) for any heavy industry is nearly impossible. Pools of capital are available to operate such mills.
4. A number of well-managed, entrepreneurial firms continue to grow despite these obstacles. In some instances they have partially revived defunct operations of firms going out of business.
5. Some of the job losses reflected in the employment data reflect companies eliminating low-end jobs through mechanization. While regrettable at the time, jobs lost in this way are setting the stage for competitive survival.
6. The State's paper industry is under siege. Several mills have operated under bankruptcy this year. Since 1990, cutbacks have occurred at all mills, leading to a loss of about 5,000 of the State's best blue collar jobs. Severe operating conditions worldwide cast a shadow of uncertainty over many remaining mills. Global overcapacity is a major underlying cause (Price Waterhouse Coopers, 2003).
7. Strikingly, however, Maine has yet to permanently lose an entire large integrated virgin-fiber based production unit. This has occurred elsewhere in the Northeast and in the South, where most of the mills are newer and larger than those in Maine, though they compete in different markets.

Industry Weaknesses

1. The nominal payments by new owners to buy paper mills in the Northeast offer irrefutable evidence of the marginality of this region's competitive position for many grades (considerable detail was presented at the University's Forum on the Paper Industry at Bangor in spring 2003. <http://www.umaine.edu/mcsc/paperconf.htm>)
2. It is so cheap to buy paper mills on Wall Street or at the bankruptcy court that no one can afford to build new, modern ones. The result is a "Smithsonian Trap" that locks the industry into ever more ancient mills. In such mills, incremental improvements in productivity, quality, or environmental performance are more costly than they would be in a brand new mill. Worse, the gains that can be made do not include increased machine widths, which are a significant dimension of the higher productivity of the most modern mills.
3. Fiber supply limits are well known. For the largest mills, they are undoubtedly perceived as a constraint on the expansion plans that inevitably accompany major modernizations. Other regions of the world offer not only low fiber costs, but considerable potential for expansion.
4. The small spruce logs on log decks at northern Maine mills are larger than seen in northern Quebec, but not by much. A look at these log decks would make a sawmiller of the 1970's cry. Technology has enabled the industry to make 2x4s from these tiny logs, but has not taught them how to make a profit doing it. The continent is in a glut of 2x4s, as everybody has an abundance of small trees.
5. Due to maturing markets, aging mills, high cost wood, and the high dollar, imports have increased dramatically. It is too soon to tell whether recent exchange rate declines will persist and how much this would have (Figs. F & G). From Europe alone, the U.S. imported in 2002 almost one billion feet of softwood, more than Maine's entire output. European shipment was to the U.S. increased ten-fold over five years. Rising imports of printing and writing grades have at times been based on quality as well as price. These imports strike directly at Maine's grade mix.

Figure F

US Trade in Softwood Lumber 1993-2002

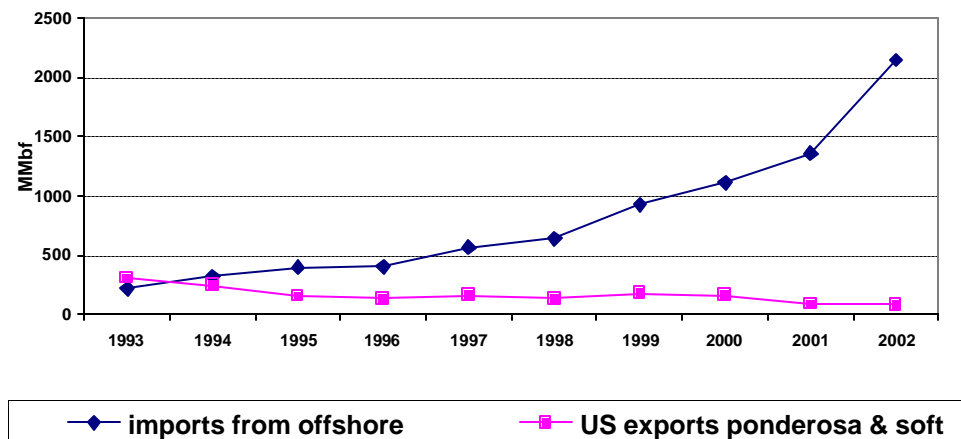
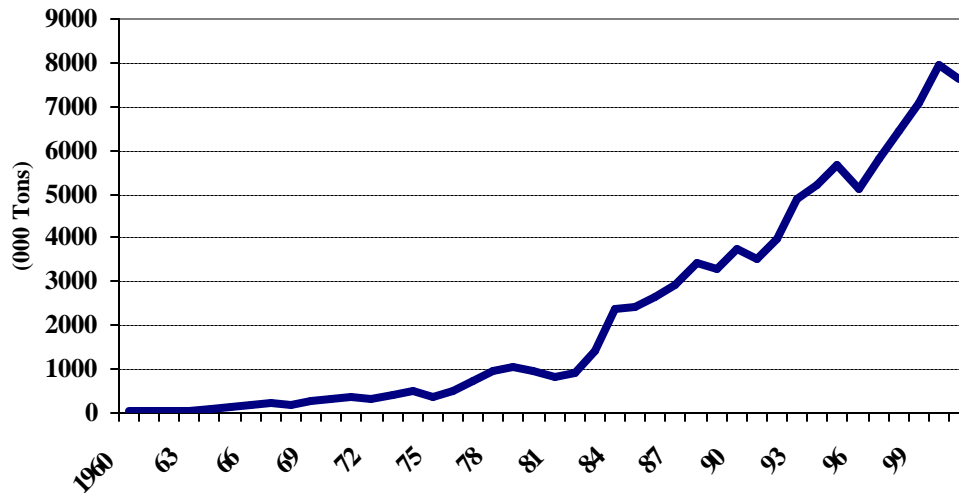


Figure G

U.S. Imports of Printing & Writing Papers, 1960-2001



Source: AF&PA

A severely weakened branch of the industry is its logging infrastructure. A decade or more of severe pressure on rates, driven by restructuring, low end product prices, and chronic overcapacity, has significantly reduced employment in this field. Output per year and per employee has risen, and safety has dramatically improved. Surveys show, however, that many loggers are not urging their offspring to enter the field, as was common in former generations (A. Egan, research in progress).

6. The traditional stability of land ownership has been a factor favoring investment in the past. Today's ownership instability is weakening this past advantage.
7. An especially ominous trend is that value added plants are not just losing business to competing suppliers; the customers themselves are dropping out due to import competition. This is one reason that this restructuring is not just a cyclical dip; these downstream companies will not be back.
8. Many observers note that many small companies are just too small to support aggressive marketing and continuous technological improvement.
9. In many solid wood products, markets have multi-step distribution and are highly fragmented. This inhibits direct contact with end users and makes introduction of new products, brands, or product concepts like certification costly and difficult.
10. The surviving energy markets supply outlets for low-value mill byproducts and tops, bark, and waste from small wood processing plants. These markets are critical as they enable plants to gain some revenue from these byproducts instead of having to incur disposal charges which are burdensome in some areas. They also create jobs in small

communities. As these markets have weakened it has become a major concern for many plants.

Industry Opportunities

At a time when small plants are being closed, large plants are downsizing, communities are being disrupted by waves of unemployment, the forest's wood output is straining at its natural and economic limits, and imports are rising every quarter – it seems idle to talk about opportunities. Perhaps it is just as well – the future path is not easily discernable. Here are places to begin:

1. We should be talking about retention and restructuring; if these can be aided and supported, it will be an achievement. This will be a lot of work.
2. Research-based products may offer opportunities, based on the distinctive, nationally significant technology capabilities of the University of Maine in this field. Yet, turning these technological and scientific capabilities into operating plants and products and jobs has turned out to be risky and difficult. We need to learn better how to do this.
3. Some feasible technology may emerge for producing chemicals or energy products from unused woody biomass or plant byproducts. This would be a very long-term prospect. Unfortunately, Maine has no monopoly on low cost, low-grade wood, and has significant negatives in its business climate for large-scale, capital-intensive industry. Still, alertness to new opportunities, coupled with due skepticism, is warranted.
4. There are a number of opportunities to relieve rail and highway transportation bottlenecks affecting the industry (Cambridge Systematics, 2002).
5. A more responsive capability for helping workers and communities adapt to plant closings would be useful.
6. The extensive network of technical expertise, management advice services, and financial support available to Maine small businesses has not been effectively marketed in this sector.

The Industry Challenges

1. The Exchange Rate

The recent high exchange rate on the U.S. dollar has severely harmed U.S. and Maine manufacturing. The rate's decline over the past year is encouraging, but may not undo the damage that has already been done. The period of strong dollar both sucked in product from offshore and also hammered exports that had been built up over many years of patient effort and investment.

2. Wood and Nonwood Competition

The wood sector has always been its own worst competitor. The important innovation of I-joists has benefited homebuilders and homebuyers, but has displaced volumes of softwood construction lumber equal to many times Maine's annual production. Laminated veneer lumber has displaced 2x10 and 2x12 spruce. Makers of Medium Density Fiberboard (MDF) are offering furniture makers a material that offers price stability, good technical qualities, and impressive finishing options, thereby taking more chunks out of solid wood markets in furniture and cabinets. At present there are no MDF or particleboard mills in Maine. In solid products, "plastic lumber" (often from recycled stock), vinyl siding, fiber cement products, and improved roofing products have annexed markets that were owned by wood a generation or two ago. Steel studs are now standard in interior walls in urban areas and in commercial

construction. These developments have cost jobs in Maine, as sawmills serving these markets have had nowhere else to turn for markets.

3. Offshore Investment Climate

Country risk-comparisons are being revised by U.S. wood products companies and timber investors. Not long ago, the U.S. was perceived (at least by American business) as a strong and stable economy with stable institutions, a strong currency, and strong protection for business interests. A long record of disappointment was compiled by offshore investments that vanished into the pockets of corrupt officials, nationalizations by radical regimes, or the mire of gangsterism and nonexistent laws of contract.

For years, U.S. wood and paper companies had no serious interest in offshore investment. This has changed. The U.S. economy is now less stable, and its political risks are rising. Product markets are mature. Assets here are aging. The incentives to spend heavily to bring them to world-class status are weak to nonexistent. Today, a major U.S. wood products firm has invested in timber plantations in Uruguay, once a veritable poster child for political instability.

4. Sprawl

In southern Maine and along the fringes of the wildlands, the continued sprawl and fragmentation of parcels threatens supply and drives up the cost of obtaining wood. Increasingly, small parcels of wood included in inventories are actually not loggable. The effects are delayed by the short-term pulse of land and right-of-way clearing wood that accompanies development.

5. Certified Wood Markets

Despite the large area of certified forest land, and many efforts to promote certified products to consumers and manufacturers, the certified market is developing slowly. It has turned out to be much more difficult to develop this market than was once thought. Also, other areas can gain certification. For example, areas of intensively managed radiata pine in New Zealand are now certified, despite the fact that they use practices that would be uncertifiable in the U.S. Certification, for some species could turn out to be not an advantage but a disadvantage for Maine producers.

6. Perceptions of Business Climate

It is widely perceived within the paper and lumber industries, and by some outside observers, that Maine's cost of doing business is high. For some key items, this appears indisputable. It is also widely felt that many Maine communities are actively hostile to new plants.

7. Investment Returns are Low

Most North American wood products and paper end use markets are mature or slow-growing. Existing plants have written off old machinery and have low accounting capital costs. Pricing competition is often described as "cut-throat." Add to this picture the escalating import competition, and it is not surprising that in many lives, return on investment in the existing business is often low. Return on new machinery investments is very low. It has been a constant refrain that investment has been low, but there are good reasons for this.

Given these many dynamic trends, the Maine industry's outlook is uncertain. Through the late 1990's, the industry showed encouraging signs of resilience. Yet, despite strengthening in lumber and in some paper prices since midsummer 2003 (Rudder, 2003), the likelihood of further gains in prices and volumes is uncertain. More importantly, a gain in North American market conditions would not change the fact that emerging offshore competitors have dramatically lower costs, and that overcapacity persists. Finally, we do not know the extent to which rising interest rates will hurt the housing sector, which is approaching "bubble" conditions in many local areas.

While the worst of the job shrinkage may be behind us in Maine, there is no basis to conclude that we have hit bottom.

New Ways of Thinking Needed

Wood products and paper manufacturers came to Maine to develop needed hydropower, to use the rivers for process water and as waste sinks, to ship to national and foreign ports from Maine’s docks, and to make use of abundant and low-cost timber resources. These conditions kept many jobs here for generations and enabled small communities to persist. These jobs gave chances to go to college and dignity in retirement to several generations of papermaking families. The industry retained an economic base for numerous small towns. Unless there are major new changes, these job losses can be considered permanent (Fig. H).

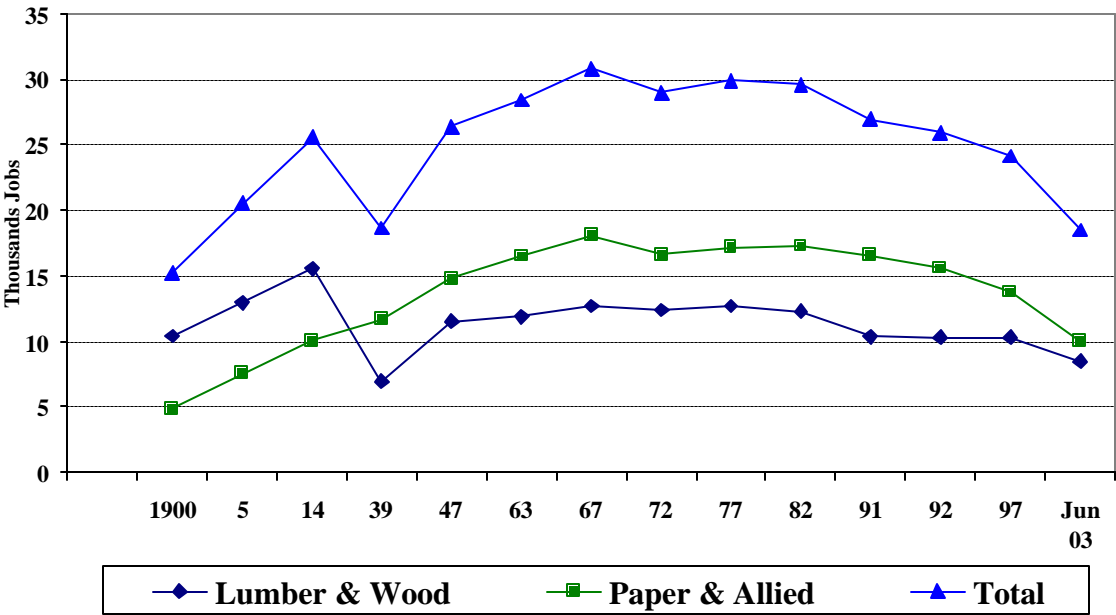
Here is a start at some “New Ways of Thinking:”

U.S. Manufacturing Crisis

Nationwide, U.S. manufacturing is in crisis. The shrinkage in employment has been severe, and bids fair to continue. It has affected so-called “New Economy” industries, old-line trades, and resource sectors. The problems of Maine’s lumber mills, paper mills, and turnery shops are not just sector-specific.

Figure H

Maine Forest Industry Employment,
1900 to June 2003



Source: Census of Mfrs, U.S. Bureau of the Census with Census of Maine Mfrs for 1982a and 1991 to 1997; and MDOL, March, 2002.

Note: SPO, 2001 supplies estimates that are somewhat higher, partly due to different data and definitions.

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Restructuring, Not a Cycle

The current changes in Maine’s forest sector are not a cyclical downturn that will rebound soon. They are based on restructuring of individual plants, of the companies themselves, and the entire North American forest products sector. Maine is not unique in seeing severe impacts, and in some respects has fared better than some competing regions.

Forest Proximity is not Necessary

In this century, it is not necessary for secondary wood producers to build in the shadow of the forest; many of the world’s greatest concentrations of these industries are elsewhere. In the tropics, bare fields can be producing pulpwood in six to ten years. Anywhere, producers can import the lumber, panels, or veneer they need. Large quantities of logs cross international borders.

A Cautious Approach to Value Added

For decades the mantra has been that value added is the path to survival for firms, to more employment for Maine communities. This mantra was always an oversimplification; in today’s competitive world, it is obsolete. For some firms, for some products, value adding may be part of the solution, but as a general prescription it may be a false promise. Our yields of high-grade hardwood are low, and our spruce-fir lends itself to few value added options. Our white pine, which does process well into dozens of useful items, has seen its markets annexed by competitors. Our competitors’ costs are low, and they are gaining economies of scale and distribution. A cautious approach is one in which the private sector identifies niche products and markets and the public sector creates an environment that is receptive to the promotion of value added products. The key may be an intangible value added – creating a brand of Maine wood products.

Conservation Easements

Maine is now a national leader in the extent of conservation easements on forest land. These easements vary widely in detail and management intent. This area is likely to grow in the future. In nearly all cases, some level of working forest management emphasis is provided for, and conversion of the land to other uses is prevented. We are only beginning to learn how to write and administer such easements, and how to think about a landscape increasingly affected by them. Some businesses in forest products and outdoor recreation report that they are already benefiting from the stability provided by conservation easements in their regions.

Ownership Changing

In the wildlands, a new pattern of ownership is emerging from the ashes of the old. We need new ways of thinking about future supply under this new ownership system. The breakup of large empires into smaller pieces, with more dispersed ownership, is not in itself troublesome. But the declared short time horizons of some new buyers and the evident emphasis on quick returns through removing “surplus” growing stock are cause for concern.

Time Horizons of Forest Owners

As the sizes of smaller tracts continue to decline, ownership time-horizons shrink, and suburbia seems to engulf the forest, new modes of relating to these smaller owners for distributing forestry advice are needed. The landowner assistance and cost-sharing approaches of the 1970’s worked for a largely rural area. Those methods may not work for a forest that is increasingly in the grey penumbra of suburbia.

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Composites Not a Substitute for Forest Management

We often hear that the wave of the future is composites; you grind up the tree and glue it together for whatever properties you want. This superficially appealing notion seems to justify ignoring tree size and quality and just managing forests for tons. This may be so for some places but is not likely for Maine. There are no nonstructural board plants here now, and are not likely to be in the future (though there are three OSB plants). Composite board plants are closing in the northeast, not opening. A new plant, Correct-Deck, making a wood-plastic product, is growing rapidly. A key to its success is that it makes a branded consumer product and not a generic commodity.

Business and Worker Skills

Programs to upgrade managerial capabilities, marketing skill, and business capacity, as well as worker skills, will be essential to retain such remaining wood processing capability as still survives here. Some of these companies may have no chance for survival other than to convert themselves into marketing agents for offshore producers. The choice may be between a few jobs retained in this manner, and zero retained by pursuing illusions and false hopes that somehow the last century will come back if the exchange rate improves. Aggressive technology extension is needed.

U.S./Canadian Lumber Trade Policy – A Disaster

Better management of the U.S./Canadian trade relationship in softwood lumber is mandatory. The current situation is a tragic example of bad trade policies, industry wishful thinking, and misdirected political meddling. There are several I-joist plants to the north and east of Maine, some within a stone’s throw of the State line. They serve U.S. customers. U.S. trade actions against Canadian softwood are a major reason that none of these are in Maine. Despite all-time high softwood lumber consumption in 2003, prices are down, mills are closing, and workers and communities are suffering. Instead of improving prices, our trade policies have made them worse. The results, unforeseen by lawyers, officials, and experts, have been damaging for all parties on both sides of the border. There is no effective accountability for those responsible for creating this situation. Our traditional ways of thinking about trade policy, reinforced by winner-take-all attitudes, folly, and economic illiteracy are patently unequal to the task. The first step in finding a cure is to face this fact.

Policy Polarization

The wood-based industries need to be seen as part and parcel of a larger problem of manufacturing competitiveness. In particular, the severe challenges faced by the mature, capital intensive paper industry requires judgment and ingenuity in order to sustain a business environment in which capital investments may be retained or attracted. Adherence to polarized and rigid positions of the past concerning regulations, taxation, and public policies will deliver disappointment and failure. The residents of our mill towns and workers deserve better.

Policy Obsolescence

The economic development programs now available emerged at a time when Maine was competing with Massachusetts, Minnesota, Vermont, or New York for an investment. By providing industrial space, an IGB, a training package, or guaranteed loans, Maine could offset its tax disadvantages.

In these ways, operating cost disadvantages of 5-10% could be offset, helping Maine plants to survive and even grow. Yet, the wave of rural plant closings nationwide testifies to the inadequacy of these programs in the face of competitive pressures of unprecedented intensity.

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Implications for Policy

The fertility of Maine's forests is one of the amazing miracles of our time. It has stood up under two hundred years of constant shortsightedness.

... Without new planting, without protection, the pines and spruces have come trooping bravely back, have created new soil and new moisture and new forests. And this evergreen empire could be made tenfold greater if men would assist the tough resourcefulness of a soil that is bound to bring forth forests to house the children of the future.

Robert P. Tristram Coffin, Kennebec, 1937.

For the resource, the importance of a stable public policy environment has not changed. If anything, it becomes more important as the ownership and market environment have become less stable. At a time of economic stress and unsettling change, it is hard to summon the optimism of the poet about Maine's forest future.

The first priority is to recognize that the northeastern economy is restructuring in a largely permanent way. The general shift away from manufacturing, and especially resource-based employment, is permanent. This is not a cyclical downturn as we have seen in the past, in which we will return to the employment levels of the previous peak. Second, we have probably not heard all the bad news yet. Though the U.S. dollar has weakened in the past year, and there are indications that this has been helpful to the U.S. manufacturing sector, the other long-term challenges have not gone away. This means that we are in new territory, economically, politically, and socially. Our familiar methods of providing for economic development, industrial parks, subsidized financing and the like, were designed for a different world. That world is gone. The question is not, how to get a plant to expand here and not in Wisconsin; it is how to compete with China or Brazil.

Maine's forest resource, its ownership patterns, and its wood-based industry are reinventing themselves under the stress of the most extreme competitive pressures in decades. We barely understand how public policy affects these developments, and can only dimly discern bold new policies that will help preserve public values and sustain important existing economic interests. All this change and instability feeds public unease about the forest's future and helps generate sympathy for a proposed large National Park.

Maine must base its future on a sustainable competitive advantage. This means growing high quality wood of valuable species in a semi-wild to wild setting. We have lost the race to grow for tons. We need to win the race for quality.

Our first rule must be that Stability Counts.

The second rule is Do No Harm. Under this second rule, we must review instances where our existing public policies seem to be having perverse results, and fix them; the Legislature has in fact been doing this.

The third rule is, No Wishful Thinking. Our hopes and our policies must be based on our best

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- appraisal of a tough and dynamic land and product market, on the world as it is. Our policies must
- then focus on well-tested methods of moving forward toward shared goals, a step at a time.
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- The last rule is, The Perfect can be the Enemy of the Good. There is no policy that will satisfy everyone. There are no policies that will fully resolve any single problem, much less all of them at once. And we do not even agree on what the problems are. Our policy tools are imperfect, blunt, and are forged in an imperfect mechanism in which politics, budget limits, and administrative practicalities affect program design and the results.

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Appendix I: Sustaining Nature-based Tourism in Vacationland

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Summary

Commercial tourism is not a distinct industry, but rather a diffuse group of thousands of businesses that derive some or all of their revenues from leisure travelers. They range from sporting camps and whale watches to gas stations and variety stores. Tourism is important to the economy of every Maine region. It directly generates nearly seven per cent of Maine's gross state product and over ten percent of our employment, although Maine's share of national overnight trips stagnated in the latter 1990s and our share of the Northeast market has declined.

All Maine tourism is dependent directly on the state's outstanding natural attractions or indirectly on the state's natural and cultural heritage. Among the five resource-based industries addressed by this Conference, tourism is uniquely dependent upon the vitality and practices of the other four. Fishing villages, open farm landscapes, and vast forests are all tourism resources.

There are two core sustainable tourism challenges. The first is summer congestion along the coast from Kittery to Mount Desert, putting stress on social and environmental carrying capacities. The second is a lack of powerful brand image or destination drivers for the economically distressed Northern Forest and Downeast Lakes/Bold Coast regions. Both coast and hinterland are adversely affected by a heavy dependence on automobile travel (92% of tourists) and the preponderance of day-trippers in the tourist mix (35 million/year, compared to 9mm. overnight visitors). Both coast and hinterland also face actual and perceived threats to recreational access to private lands and waterfronts. Finally, tourism suffers from a large proportion of marginally profitable small businesses that are unable to pay livable wages. This limits tourism's contribution to rural economic diversification, community vitality, and shared prosperity. None of these weaknesses has been researched systematically, and there is no master database covering all aspects of tourism and recreation.

We have exciting opportunities to develop tourism sustainably. They entail spreading best management practices among tourism businesses; strengthening tourism's linkages to agriculture, fisheries, and forest products; shaping a multi-modal transportation network, starting from DOT's "Explore Maine" concept; and branding the Northern Forest and Downeast regions by building and effectively promoting world-class destinations. Four components of the branding strategy are a recreational master plan for public lands and easements, ecotourism certification, integrating natural with cultural and heritage attractions, and luring first-time visitors with major summer events.

Four action steps should be initiated by the Governor's Office: planning for sustained multiple-use management and recreational access on private lands; developing a recreational master plan for public lands and easements; broadening the Maine Office of Tourism's mandate and capabilities; and articulating a commitment to livable wages and multi-modal transportation development. The Tourism Commission's Natural Resources Committee should tackle the branding challenge facing interior and downeast regions; assess the potential of ecotourism certification, develop methods for assessing environmental and social carrying capacity limits; and set a prioritized tourism research agenda. Finally, the relevant state agencies and the university and community college systems should strengthen the economic linkages between tourism and agriculture, fisheries, and forest products; facilitate tourism

businesses' purchase of more production inputs from in-state suppliers; and initiate small business management assistance and training programs based on the cooperative extension model.

Introduction: The Lay of the Land

The challenge of sustainable nature-based tourism has become a focus for several state and public-private initiatives in recent years. This essay draws extensively from these initiatives and, it is hoped, will contribute to them. Since they will largely shape Maine's near term tourism policy agenda, it is worth acknowledging a few of them at the outset.

State agencies and the University of Maine co-sponsored a Symposium on Nature-based Tourism in April 2002. The Gulf of Maine Council's 2001-2006 *Action Plan* sets out the goal of developing "a nature-based tourism strategy that sustains the environment and the well-being of local people." The 2003 Governor's Conference on Tourism highlighted sustainability challenges and the synergies between agriculture and tourism. The Bureau of Parks and Lands (BPL) and the Maine Island Trail Association (MITA) are framing a ten-year management plan for public islands. The Department of Inland Fisheries and Wildlife (IFW) coordinates the Governor's Council on Sportsmen-Landowner Relations. The Downeast Resource and Conservation District's Vacationland Resources Committee is one of eight regional bodies working on a sustainable tourism strategy. And the Maine Tourism Commission has created a Natural Resources Committee (NRC) to investigate problems and opportunities in managing Maine's natural attractions. The NRC will report to the Legislature in 2004.

These initiatives reflect an encouraging expansion of inter-agency coordination, but also a growing concern that Maine tourism may not be on an environmentally or socially sustainable path. This worry is not new. Back in 1974, when tourists numbered fewer than one-fourth of today's level, the Vacation Travel Analysis Committee stressed that, "Although it is difficult to measure, tourists have a very real social and environmental impact." (MVTAC 1974: 19) The long history of such concerns indicates that most obstacles to sustainable tourism are chronic and gradually evolving, rather than acutely critical. Tourism, in this sense, does not face a crisis, as do some sectors addressed by this Conference.

Nonetheless, there is and should be a sense of urgency. Time is of the essence, not least because Maine's competitors for tourists, including every northeastern state and Canadian province, are pursuing their own strategies to capture market share. Maine's stagnant share of the US tourist market and its declining share of the northeast market in the latter 1990s reflect in part our lagging promotional efforts, but they also suggest the seriousness of Maine's competitive challenge. (Longwoods 2001).

The Conference agenda spans five sectors. Tourism's vitality is uniquely dependent upon conditions, practices, and policies in the other four sectors. Thus, tourism's future will be affected by the sustainability of open farm landscapes and historic fishing villages, changing recreational access to the Northern Forest, and the resolution of conflicts surrounding the siting of aquaculture pens. Sustainable multiple-use management of Maine's lands, shorelines, and waters is a key cross-cutting Conference theme. Another is the search for niche opportunities to strengthen mutually beneficial linkages between tourism and the four extractive industries.

Tourism is vitally important to Maine's economy and affects nearly every Maine citizen's quality of life. Although some may consider tourism a secondary use of the state's terrestrial and marine environments, Conference participants should keep in mind that tourism is a very big and special kind of "export" industry. Instead of taking in revenue from the "rest of the world" by shipping out lumber or potatoes, revenue is earned by inducing the rest of the world to visit us. Tourism's direct contribution to Maine's gross state product (ca. \$2.5 billion –

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nearly 7% of g.s.p.) exceeds the combined contributions of agriculture, marine fisheries and aquaculture. Tourism's direct employment (over 70,000 full time equivalent jobs) is greater than those three sectors plus forest products.⁵⁸ (Colgan 2003) Moreover, when a state with just over one million residents plays host to 26 million visitors from away, people's lives are bound to be affected in countless ways, often for better but sometimes for worse.

Maine tourism is influenced by powerful external forces that cannot be addressed systematically here.⁵⁹ They include national economic conditions, exchange rates (a cheaper US dollar makes Maine cheaper to Canadian and other foreign tourists), energy prices, and international tensions. Additional unknowns include policy actions, such as federal air travel complications, expanded passenger rail service, an improved east-west highway, this fall's casino referendum, and even the success of Atlantic salmon restoration. Finally, it bears repeating that we cannot precisely forecast the effects of our competitors' tourism strategies.

Tourism Strengths

The core strengths of Maine's nature-based tourism fall under three headings: location and markets, resources and products, organization and policy.

Market Strengths: Location, Tradition, and Image

With automobile-based tourism as with real estate, three critical factors are *location, location, and location*. It has become a cliché that Maine – more accurately, the south and midcoast regions – lies within a day's drive of some 50 million affluent Americans and Canadians, more than 20 million of whom are aware of Maine as a destination but have never visited us. (Stinson) Driving time is a pertinent consideration, since 92% of out-of-state visitors come by personal vehicle. Four-of-five overnight visitors come from the New England and the Mid-Atlantic states, a figure that has changed very little in 30 years. Fourteen million day trippers/year come from greater Boston alone. (Longwoods 2001: 18, 25, MVTAC 1974: 4) Proximity to such an enormous population base is a boon, but it is also problematic, as discussed below.

Maine's tradition as a major Northeast outdoor recreation destination extends back over a century, to an era when nearly all visitors arrived by rail or steamer. The culture, commerce, and physical infrastructure of numerous host communities such as Ogunquit, Naples, Camden, Rangeley, and Bar Harbor, have long since adapted to tourism's seasonal rhythms. Others, such as Greenville, Millinocket, Friendship and Stonington, seem more ambivalent about their gradual transition from resource industry town to tourist haven.

One of Maine's unique strengths, now under stress, is a tradition of recreational access to private land, most notably the vast 10 million acre Northern Forest. Indeed, the 25,000 mile logging road network opened much of the backcountry to vehicle access in the 1970s and 1980s. A key marketing advantage is that lake and mountain landscapes in the Unorganized Territories retain the mystique of places both wild and accessible from the northeast megalopolis.

Tourist surveys conducted for the Maine Office of Tourism (MOT) indicate that, when compared to national norms, nearly all of Maine's special "product strengths," relate to our beautiful scenery and excellent resources for outdoor activities *away from the coast*.

⁵⁸ A sector's direct contribution to gross state product, or value added, equals its total sales minus expenditures for inputs from outside Maine. It also excludes multiplier effects. (Estimation techniques are discussed in Vail and Heldt 2000, Vail 2003.)

⁵⁹ Since this Conference emphasizes natural resource-based sectors, this paper emphasizes leisure travel. Business trips, meetings and conventions -- important sources of revenue and areas of potential growth -- are omitted.

However, the powerful coastal “destination drivers” – lobster boats, lighthouses, L.L. Bean – seem to be in no danger of fading. Maine’s special assets also include its sightseeing appeal, “uniqueness” and worry-free atmosphere. (Longwoods 2001: 101-02) These qualities may prove especially important in this era of growth in the “general touring” market segment.

Leisure travel decisions by Maine residents are also shaped by these product strengths and appealing images. Since Mainers take 15% of the state's overnight trips and fully 48% of day trips, spending \$1.6 billion (30% of the total), marketing Maine to Mainers seems an obvious component of a sustainable tourism strategy. The potential market value of Maine's "clean, green, worry free" brand image stands to increase if world conditions remain unsettled and air travel continues to be hassle-filled.

Resources and Products

Coastal Maine already enjoys a powerful brand image, with a blend of well-known natural attractions unparalleled on the US east coast: 3500 miles of rugged shoreline, clean sand beaches, broad island-dotted bays, and mountains running to the sea. The coast “sells itself” to repeat visitors and seasonal residents. The Northern Forest region also possesses outstanding natural assets in its rivers, lakes, ponds, mountains, and diverse wildlife habitats. However, it shares these generic features with other destinations in northeastern North America and, in general, our competitors can offer more extensive public and protected lands as well as easier Interstate access from large population centers.

It is problematic to think of underutilized supply capacity as a strength, yet it is pertinent for sustainable tourism planning because most of Maine's natural attractions and rural communities have considerable potential to accommodate more visitors. With important exceptions discussed below, an effective blend of management and promotion would allow most attractions, most of the year, to accommodate substantially greater numbers – to the benefit of regional economies.

Maine's 44 million annual tourists and their ca. \$5.5 billion spending amply confirm that Maine has what it takes to lure paying customers to our backyard. Millions are drawn specifically by world class resources for diverse active and passive outdoor activities, ranging from sea kayaking to whale watching, flatwater paddling to whitewater rafting, day hiking to mountain biking, moose hunting to bird watching, and skiing to snowmobiling. For the even larger numbers who come for general touring, Maine's rock-bound coast, authentic fishing villages, brilliant red maples, pristine mountain lakes and rugged peaks are an ever-present backdrop for less strenuous leisure pursuits. Given nature's centrality in attracting tourists, it may seem puzzling that just eleven cents of the tourist dollar are spent on recreational activities *per se*. Nonetheless, it is clear from surveys that without our natural attractions, we would lose much of the remaining 89 cents that tourists spend on eating, sleeping, shopping and transportation. This essay treats all Maine tourism as nature-based at some level.

Organization and Policy Momentum

Most participants in tourism policy discussions accept that new institutions and policies will be needed to develop nature-based tourism *sustainably*. Competing interests must be reconciled and scarce financial, staffing, and other resources must be allocated among competing uses. The public-private initiatives listed in the introduction are a welcome sign that tourism stakeholders are becoming much better at communicating and collaborating. Our organizational model for tourism planning and development, centering on regional organizations, but with MOT technical, financial and marketing assistance, is sound. The Natural Resource Committee's policy dialogue is also well conceived. It brings together a wide range of stakeholders, experts, and agency representatives, building on the mutual understanding and good will that have been carefully nurtured over several years. The state has facilitated, but not micro-managed, many "win-win" precedents, such as MITA's

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Weaknesses and Challenges

The following catalogue of weaknesses may seem long and daunting. It is sure to be controversial. Readers should bear in mind that two core dilemmas stand out, one centering on Maine's coast and the other on interior and downeast regions. Some of Maine tourism's weaknesses are beyond our control, for instance fickle summer weather, mud season, and long travel distances to interior regions. Others weaknesses reflect cumulative impacts, like summer coastal congestion that cannot easily be reversed. Nonetheless, weaknesses are best viewed as challenges that can be overcome through coordinated responses by state and local policy makers, tourism businesses, and public interest organizations.

Coastal Congestion Costs: The Cumulative Effects of Minimally Managed Growth

It is widely recognized that much of the narrow coastal corridor from Kittery to Mount Desert suffers severe summer congestion, hosting well over 20 million tourists from July through September. This longstanding – and long neglected – weakness was emphasized as far back as 1974, when the entire state had just 10 million tourists a year:

“Congestion is the primary cause of serious social and environmental impact. Crowding of beaches, roads, and parks by non-residents creates social resentment among residents. Concentrated activities endanger the environment. Maine suffers from seasonal congestion (summer) and locational congestion (most notably the southern coast).” (MVTAC 1974: 19)

There has been little research into four costs of unmanaged coastal tourism growth. First, we lack systematic scientific and technical analysis of tourism's major environmental impacts, including its contribution to reduced air quality, stresses on water treatment systems and water quality, solid waste disposal, and land use change / habitat loss.

Second, year-round residents pay a cost via seasonal deterioration in quality of life as well as inflated retail, real estate, and property tax costs. Competitive markets create no incentive for tourism businesses to take these costs into account. A conspicuous economic impact is the loss of affordable housing, as conveyed by a Fourth of July 2003 headline: "Island's real estate prices soar." (AP 2003) MOT's latest *Strategic Marketing Plan* underscores that, "perceived lack of support [for tourism growth] by local residents is a growing concern." (MOT 2001: 8) It should be mentioned that tourism also confers important benefits on host community residents, ranging from richer cultural opportunities to broader dining and retail options.

Third, nearly all of tourism's estimated \$340+ million in added tax revenues accrue to the state's General Fund, while most of the associated costs for police, emergency, waste disposal, water treatment, road maintenance, etc. are borne by local taxpayers (including, of course, tourism businesses and seasonal home owners).⁶⁰ As a result, many fiscally strapped host communities have few tools to manage the summer crunch or funds for public infrastructure to accommodate tourists, such as restrooms, parking, boat launches, picnic areas, and signage. Underfunding for construction and maintenance of public facilities also

⁶⁰ Maine towns and cities get back a large part of these state revenues in the form of school funding and general revenue sharing, but not in any proportion to their tourism density.

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Interior Maine and Washington County: Lacking “Destination Drivers” and a Potent Brand Image

Maine’s hinterland has a few renowned tourist destinations and its share of hot spots – mid-summer congestion on the Allagash and Tumbledown Mountain and Presidents’ Day snowmobile crowds in Rangeley and Presque Isle come to mind. However, serious congestion and environmental damage appear to be limited to a few situations. In general, tourism continues to be a compatible secondary land use in the Northern Forest region, where use levels do not press against social or environmental carrying capacity limits. This does not mean that there are no tensions or challenges in planning future growth or in balancing tourism with other land uses and with the culture of host communities. Tensions surrounding irresponsible all-terrain vehicle and jet ski use, for instance, remind us that motorized recreation is implicated in conflicts with property owners, other recreationists, and resource conservation. (Vail 2003)

For most of Maine, the principal tourism weakness is not too much demand on natural and community resources, but too little. Nonetheless, tourist numbers and spending are on the rise for fall foliage viewing and other general touring trips, as well as for outdoor adventures such as whitewater rafting, biking and snowmobiling. The tripling of non-resident snowmobile registrations in the 1990s, driven in significant measure by suburban sprawl and limited opportunities in nearby states, indicates the potential of tourism growth to invigorate local commerce and social life during traditional off-peak seasons. (Vail 2003)

In general, tourism growth in Maine’s more remote and less well known rural regions is limited by demand, rather than supply capacity. Natural resources, businesses, and human resources are underutilized, although the mix and quality of attractions and services we currently offer are one reason for underutilization. Growth in visitors and tourist spending appear to be limited by several factors. Among them are:

- Long driving distances (on a less than ideal road network) and the trend toward short-distance day trips, noted earlier;
- limited development and promotion of attractive event and activity “packages” to compete effectively in the growing general tourism market;
- capacity limits facing high profile destination-makers such as whitewater rafting and climbing Katahdin; and
- declining participation in traditional forms of backcountry recreation: fishing, hunting and wildlife watching.⁶¹

In sum, interior and downeast regions face an inescapable reality: they lack powerful “destination drivers” that generate widespread brand recognition and confer a marketing edge over well branded competitors, in the region (White Mountains, Champlain Valley, Adirondacks), the nation (Appalachians, Rockies), and the world (Swiss Alps, New Zealand’s South Island). But beyond this inherent limitation, tourism service providers, regional tourism planning groups, and the state’s “It must be Maine!” marketing campaign have had limited success to date in developing and promoting premium quality vacation experiences that have a special appeal to potential first time visitors in the growing general tourism and outdoor recreation market segments. Limited investment in public tourist infrastructures, such as loop trails, parking, restrooms, campsites, and signage also discourages some potential repeat visitors. To top it off, Federal funding for Maine’s National Wildlife Refuges is also being squeezed. (Irland, Johnson, Springuel, Goad 2003)

⁶¹ From 1991 to 2001, according to the US Fish and Wildlife Service, participation in Maine fishing, hunting and wildlife watching dropped 22 percent, from 1.22 million to 960,000/year. (USFWS 2003: 14)

ranking among the states deteriorated for two key nature-based activities, beach trips (from 15th to 19th) and outdoor trips (from 20th to 26th). The bright spot is general touring, where our rank has improved from 23d to 18th. (Longwoods 2001: 29) Despite sizable increases in public and private promotional expenditures in recent years, Maine's promotion budget still lags behind other Northeast states. (Stinson) This may partially explain lagging demand, but there has been no systematic research to clarify the key causes.

Since 1999, the number of overnight visitors has stagnated in the range of 8.8 to 9.0 million, while the number of day trips has grown to from 30 to 35 million. This trend, previously mentioned, adversely affects coastal traffic congestion, air pollution, and numbers visiting more remote regions. It also has troubling economic implications. Survey data show that day trippers spend an average of just \$61 per person per day, compared to overnight travelers' \$136/person/day. (TIA 2002a: 8)

Core Challenges: In the face of powerful forces outside our control, the Office of Tourism's *Strategic Plan* and the state's tourism regions are on the right track in their efforts to identify, develop, and promote sustainable growth opportunities. For decades, boosting our share of first-time, overnight, general tourists has been recognized as the challenge with the largest potential economic payoff. Two specific destination development and marketing challenges are also well understood: increasing off-peak visits and luring more coastal tourists inland and Downeast. All these efforts require more sophisticated analysis of demand patterns and trends.

High Expenditure Leakages and Reduced In-state Value Added

In 1986, a Maine Vacation Travel Commission (MVTC 1986: 3) estimated that nearly sixty cents of every dollar tourists spent leaked out of Maine's economy when businesses purchased inputs produced out-of-state, ranging from recreational vehicles and watercraft to fuel, food, building materials, consulting services and insurance. In Maine's \$300 million/year snowmobiling sector, for example, the largest single expense (over \$90 million) is for snowmobiles – which are not produced in the state. (Vail 2003) Two recent studies drawing on multiple sources also conclude that leakages are in the 60% range. (Vail et al. 1998, Vail and Heldt 2000) These estimates are not precise, but they confirm that well over half of the direct income resulting from Maine tourist spending accrues to the businesses in other states and nations that supply our tourism businesses. As a consequence, the \$5 to \$6 billion tourists spend in Maine this year will generate roughly \$2.5 billion in direct income.⁶² A high leakage rate is a built-in problem for comparatively undiversified economies like Maine's. But it is also partly a curable weakness, stemming from the lack of concerted effort to strengthen networks between tourism businesses and potential in-state suppliers.

Core Challenge: Strengthen commercial links between tourism businesses and in-state suppliers of commodities (e.g. raw and processed foods, building materials, furniture, store and restaurant equipment) and services (e.g. insurance, legal and accounting services, management consulting, repairs).

Limited Entrepreneurial and Managerial Capacity

The tourism economy is not one industry but rather a diverse mix of goods and services. Thousands of businesses, from motels to gas stations, derive some or all of their revenue from tourists. Unlike the corporate-dominated tourism of Orlando or Las Vegas, Maine tourism services are overwhelmingly supplied by small independent businesses (less than 50

⁶² These figures omit the local and state *multiplier effects*, which result from the in-state spending of income derived from tourism. The central point to keep in mind is that multipliers should be calculated on a base of net in -state income, not total tourist spending (or farm sales, etc.). (see Vail and Heldt 2000)

employees). To my knowledge, there has been no research documenting the entrepreneurial strengths and weaknesses of Maine's tourism service providers, or identifying their critical needs in finance, product quality, production management, labor relations, or marketing. Maine's best practice tourism firms are outstanding, judging by awards they have received from the Governor, the Margaret Chase Smith Quality Centers, and Maine Businesses for Social Responsibility. However, after 30 years of "participant observation", it seems to me that average practice falls well short of best practice in every aspect of providing quality services at a competitive cost. (see Vail et al. 1998, Vail and Kavanaugh 2000 for examples) Indeed, a cross-cutting theme at the March Blaine House Summit was that small businesses need more effective assistance in all aspects of their operations.

Core Challenge: Limited small business entrepreneurship and management capabilities are a persistent, economy-wide problem for Maine. The challenge is to provide customized training and assistance to help hundreds more recreation and hospitality businesses move closer to the level of our best practice firms in lodging, dining, and recreational services.

Low Median Earnings and Skimpy Benefits

Maine tourism offers thousands of rewarding and well-compensated careers, spanning an enormous range of occupations, such as rafting outfitters, motel managers, fishing guides, whale watch captains, executive chefs, museum curators, and self-employed craftspeople. For thousands more, tourism offers seasonal and part-time opportunities that fit lifestyle choices or help finance higher education. Unfortunately, however, the best available evidence indicates that compared to the overall Maine economy, tourism offers proportionally far fewer jobs with livable wages and benefits. The fact that this pattern holds nationally, not just in Maine, means that this is not a "blame game;" there are structural causes.

Tourism's share of Maine employment grew in the 1990s and development planners – local, regional, and state – seek continued tourism growth. If the economic goals of tourism policy are to contribute to community vitality and shared prosperity, it follows that we must find ways to create thousands more quality jobs.

A 2000 study, relying primarily on tourism industry surveys and Maine Bureau of Labor Statistics data, concluded that about three-fourths of tourism employees are hourly wage earners, and that just one-fourth of them attained the Maine Economic Growth Council's livable wage standard (then roughly \$10.00/hour) or received employer-supported health benefits.⁶³ Based on optimistic assumptions about salaried and self-employed people, the study concluded that at most 40% of all people employed in Maine tourism received a livable wage or salary in 1998-99. This compared to 68% of the state's total workforce. (Vail and Kavanaugh 2000) These patterns are deeply rooted in tourism's occupational mix, which is heavily weighted toward low-end service sector jobs and seasonal or part time employment. The June 2003 *Labor Market Digest* shows full time workers in "leisure and hospitality services" with average earnings of \$13,320 in 2002, or less than half of Maine's average private sector earnings (\$29,239). (MDOL 2003)

Low wages, poor benefits, unattractive work conditions, and lack of career prospects are certainly among the key reasons for Maine's much publicized tourism labor shortage, that extends even to high unemployment labor markets such as Millinocket and Greenville.

⁶³ The industry survey and the BLS methodology incorporate estimates of tips received by wait staff and other categories of hourly-paid employee. Wait staff's base pay is typically below \$3.00/hour, and a large proportion of them are employed by eating establishments where the average gratuity, spread over all work hours, is less than an additional \$7.

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Tourism has a large proportion of self-employed people, many of whom, as mentioned, have outstanding livelihoods and high earnings. And it is argued that official statistics, even with corrective adjustments, do not fully capture unreported and untaxed income. (Stinson) Nonetheless, it has to be discouraging that average earnings of Maine's self-employed were just \$15,765 in 2001, less than half the average received by wage and salary earners. (Lawton 2003)

Two of tourism's underlying weaknesses are low labor productivity and seasonality. However, low productivity is itself both a cause and an effect. It results in part from many employees' limited skills, experience, and motivation. (This has been one reason for the hospitality sectors' increased recruitment of foreign seasonal employees.) But it is also significantly affected by many employers' limited managerial capacity and their slim profit margins. As a result, many employers and their workers seem to be caught in a vicious circle, where:

low productivity → low pay and poor work environment →

deficient employee morale and effort → low productivity.

Core Challenges: Shaping thousands more quality tourism jobs is a tough nut to crack. It really has to be part of a larger state commitment and strategy to create livable wage jobs. To start, we need a thorough, accurate assessment of wages and benefits in tourism's various sub-sectors and occupations: where is the problem most serious? Spreading *high performance work organization* to hundreds more small tourism businesses is a win-win strategy, whereby increased productivity raises both profits and workers' pay. (Vail and Hillard 1997) Part of the challenge is to shift tourists' demand toward higher-end recreational and hospitality services.

Shaky Knowledge Base for Public Policy and Business Decisions

Maine benefits from increasingly sophisticated state, regional, and community efforts to plan tourism's future, including several focused specifically on sustainable nature-based tourism. However, tourism planning suffers from a lack of solid benchmark data, time series, and case studies to guide product development and assess broad market trends and niche opportunities, environmental impacts, residents' attitudes and social costs. The state and stakeholders also have limited technical capacity to analyze information that is already available and evaluate programs that are already underway. Numerous specific knowledge gaps have already been mentioned. Although useful studies have been conducted over the years, tourism research is fragmented and findings rapidly become dated. The Office of Tourism recognizes the need, but lacks in-house research capability or the funds to commission a systematic research effort. At the same time, the University of Maine's Parks, Recreation and Tourism Program and Department of Resource Economics and Policy have a cadre of talented natural and social scientists, but no mandate or funding to fill the tourism knowledge gap.

Core Challenge: Develop a prioritized tourism research agenda, identify appropriate research institutions, and increase state investment in tourism research.

Opportunities for Sustainable Tourism Development

Maine enjoys untapped opportunities to strengthen and grow the tourism economy -- sustainably. Four opportunities are sketched here. The most important, in my view, is our chance to improve the Northern Forest and Downeast regions' position as destinations of choice for first-time visitors from across the USA and from other nations. Based on a back-of-the-envelope assessment of social and environmental carrying capacities, I believe these regions could host 300,000 to 600,000 more summer visitors (just 1.5 to 3.0 percent of the number who visit the coast each summer) in ways that enhance tourism employment and

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revenues while sustaining, perhaps even improving recreational opportunities for Maine residents. Given the mixed demand trends and the competitive weaknesses these regions currently face -- and given neighboring states and provinces' tactics to lure the same customers -- this is not a simple, costless, or riskless opportunity. If it were easy, we would already have done it.

Our prime opportunity is to capture a growing share of growing markets, while retaining Maine's strong position in more traditional backcountry recreation. The indicators point to general touring, frequently coupled with non-consumptive outdoor activities such as hiking, mountain biking, whitewater rafting, and fall foliage viewing, as the biggest growth prospects. (Longwoods 2001, TIA 2002b) With an effective multiple-use management strategy for our private, public, and trust lands, this should be compatible with the goals of sustaining Maine's traditional strong position in fishing, hunting, and trapping. In the words of BPL director, David Soucy, "It's a big state and a big woods, and I believe there's room for all of us." His vision, of course, includes both commercial timber management and many forms of recreation. (Edgecomb 2003) We can draw confidence from numerous success stories about innovative guides, outfitters, and sporting camp operators who have adapted their services and marketing strategies to increase revenues by combining old clients with the "new tourists." Despite declining participation in consumptive outdoor recreation, it will remain a vital component of both the tourism economy and the rural Maine way of life; and it will continue to attract over one-half million participants and generate several hundred million dollars in gross annual revenues. (Teisl and Boyle 1998)

Branding the Northern Forest and Downeast Regions: Building and Promoting Destinations

Two clusters of facts shape my thinking about a farsighted growth strategy for Maine's interior and downeast regions. First, with the "boomer" generation entering retirement, the 55-and-over age group will grow by more than 60% between 2000 and 2020. The 35-to-54 age group will grow just 3%. Older travelers have a high propensity to take overnight (i.e. longer distance) trips, travel year-round, and participate in general tourism: multi-day trips with extensive driving (or riding) and multiple attractions. As mentioned, Maine has improved its national rank for general touring; the challenge is to raise interior Maine's profile as a destination. Second, the 19-to-34 age group will grow 20% by 2020. Many in this cohort are strongly attracted to outdoor adventures, such as biking, hiking, technical climbing, camping, skiing, paddling and nature photography. (TIA 2002b, pp 3 – 26) Some North American destinations will capture these growing cohorts. Why not interior and downeast Maine?

Turning the state's brand – "It Must be Maine!" – into a potent tool for promoting interior and downeast regions is a two-part challenge. The first is to develop "packages" of activities, events, and facilities with the qualities sought by target consumer groups, particularly affluent middle-aged general tourists and younger outdoor adventure seekers. The second task is to market the packages effectively through a strategic combination of print and electronic media, running the gamut from "trails" brochures to multi-link web sites and TV spots in target markets. Needless to say, this requires effective organization, entrepreneurial dynamism, and sizable investment. Maine is making impressive progress on the organizing front, but less with entrepreneurial development and funding. Borrowing ideas from many others, my current thinking about an effective destination-building strategy centers on four complementary components.

Certifying Ecotourism

Nations like Australia and Sweden are attracting growing numbers of environmentally-conscious, high-spending visitors through their certified ecotourism programs. They started by establishing core principles for sustainable, environmentally friendly tourism. They then set certification standards and procedures and created distinctive logos and marketing

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campaigns. The evidence suggests that these well-designed and well-publicized certification systems are effective advertisements for the nations’ natural areas as a whole, and not just for the certified service providers. (Honey 2003) If Maine were to become the first northeast state to adopt certified ecotourism, it might capitalize on its well-deserved “clean and green” image. (We might choose to give it a different name – the Swedish brand is “Nature’s Best.”) Maine has an extraordinary range of tourism operations – fishing guides, XC ski centers, whitewater outfitters, windjammer cruises, whale watches, organic farm B&Bs, and restaurants – that with relatively minor adaptations could earn certification, even under rigorous standards.

IFW’s accreditation of Maine Guides sets a strong precedent. And the coordinated efforts of the Maine Sea Kayak Guides and Instructors (“leave no trace”) and Maine Island Trail Association (campsite capacity management) might serve as a model for Maine accreditation. The Swedish and Australian examples show that maximum marketing advantage – as well as maximum environmental protection – requires industry-wide standards, audit procedures, labeling, and promotion, rather than separate initiatives for different tourism market niches. In Sweden, the impetus for national certification came from businesses and conservation organizations, with government following and playing important facilitating roles (e.g. in standard setting), but not running the show. (Vail 2003b) Given Maine’s political traditions, that would seem to be the best approach here as well.

Shaping Destinations: Nature and Culture -- Plus High Quality Food and Lodging

All of Maine’s eight tourism regions, with financial and technical support from MOT, are engaged in developing and promoting cultural and heritage attractions. These range from museums and handicrafts to farmers’ markets and folk arts festivals. This makes eminent sense, considering that 65% of US overnight tourist trips include some arts, culture, or heritage activity. (NASAA 2001) Brochures like the *Maine Guide to Crafts and Culture*, *The Maine Landscape Garden Trail*, *Farm Bed and Breakfasts of Maine*, and *Kennebec-Chaudière International Corridor*, with their associated web links, are excellent invitations to participate in those activities. These attractions presumably have four special benefits. First, tourists typically move beyond major gateway towns to visit and spend money in more out-of-the-way communities. Second, these attractions encourage Maine residents to consider vacationing here. Third, they encourage some tourists “from away” to consider Maine as a place to live. Finally, and not least, they enhance the quality of life for residents. (Hazard and Vail 2003) These effects have not been studied systematically for Maine.

Unfortunately, when regional groups like the Maine Mountain Heritage Network and the Downeast Heritage Center explore marketing strategies, they quickly learn that rural Maine lacks the handy location or the wealth of long-established cultural attractions to compete with destinations like the Champlain Valley or Lancaster County (PA) on that basis alone. The package that *could* potentially be a destination driver combines nature and culture, and includes high quality dining and lodging options. This is a central message of an influential study, *Balancing Nature and Culture in Gateway Communities*. (Howe et al. 1997) Fresh local food, purchased at the farm or enjoyed in dining establishments, is part of the rural mystique and an important way for tourism to support the farm sector. (MMHN 2003)

Major Summer Events to Expand the First-Time Visitor Base

It is an inescapable reality that rural Maine is not on the radar screens of many potential tourists, including millions who visit our coast each year but do not venture inland. It is problematic, of course, to propose mass tourism events as a promotional tool for nature-based tourism which seeks to be community- and environment-friendly. But we should not ignore that this summer’s National Folk Festival and the Phish concerts drew tens of thousands of first-time visitors to Bangor and Aroostook County. Other events, such as the Common Ground Fair, have also been magnets.

A marketing premise is that some event-goers spend additional days sampling the local attractions and will make repeat visits. Regional organizations such as Mountain Counties Heritage have been working to develop and promote special events, but without as yet discovering how to make a quantum leap in event visibility and attendance. Our lack of success is reflected in Maine's ranking among the bottom ten states in "special event trips." (Longwoods 2001: 29) Despite the downside effects of this strategy – short term congestion and disruption – developing major summer events should be part of the Northern Forest and Downeast portfolios. Unfortunately, we lack market research to indicate whether the key is folk arts, performance arts, sporting competitions, or some other event.

A Recreation Master Plan for Public and Trust Lands and Easements

At this special moment in time, Maine has the opportunity to create an outstanding network of recreational lands in the Northern Forest and the Downeast Lakes/Bold Coast regions. With excellent infrastructure and promotion, these networks might well have the tourist drawing power and gateway community benefits of a major national forest or even a national park. This opportunity arises because of the state's and conservation organizations' farsighted acquisition of lands and easements. I hope Maine voters will have the opportunity to support another major land bond next year, sustaining the momentum well into the future.

Developing a recreational master plan for this evolving patchwork of public, trust, and easement lands is a big challenge. It requires balancing the sometimes-competing visions and interests of many stakeholder groups and implies a new level of collaboration among Land for Maine's Future (LMF), the Bureau of Parks and Lands (BPL) and land trust organizations. There is room here only to sketch a few elements that could contribute to such a plan.

- Land for Maine's Future (LMF) designs a long-term plan for further acquisitions and easements, placing a high value on recreational potential in prioritizing parcels. A goal is to create high profile recreational land clusters (e.g. Evans Notch-to-Grafton Notch, Katahdin Iron Works, Greater Baxter, Downeast Lakes). In a willing seller context, with escalating land prices, these are not simple tasks; nonetheless, it is important to reduce the share of LMF's scarce resources channeled into piecemeal and reactive deals.
- LMF, BPL, IFW and stakeholder groups should start the process of shaping a master plan for recreational uses of the growing system of state parks, Public Lots, and conservation easements, shaping land clusters will that have strong appeal to many different kinds of recreational users. Considering that such a plan would encompass well over one million acres of easements, it is a major undertaking. At a large landscape scale, high priority should be given to compatibility of consumptive and non-consumptive activities and to motorized and non-motorized recreation. An assessment should be made of the tourism development benefits from expanding the system of ecological reserves as well as shaping a Northern Forest wilderness area. (Hunter 2003)
- With its limited staffing and budget, BPL is hard pressed to manage multiple uses on existing public lands. It will need major increases to manage recreation growth on newly acquired lands, especially on easements in working forests. At many sites tourism growth will require infrastructure upgrades, ranging from family-friendly loop hiking trails to parking, restrooms, campsites, and signage. (Glidden, Knoll)
- The snowmobilers' Interconnected Trail System (ITS) has shown the tremendous marketing and rural economic development potential of expedition trails crossing multiple private and public ownerships. The state has supported the ITS effort for thirty years and should further increase its Trail Grant contribution. It should also continue to facilitate two new long distance trails now taking shape: the Mahoussocs-to-Moosehead cross country ski and lodge system, and the Northern Forest Canoe Trail. An analysis of their economic potential would be useful.
- The Office of Tourism, regional tourism organizations, and tourism business groups – collaborating with BPL and LMF – should develop promotion strategies that focus the "It

Must Be Maine!” campaign on the regions’ outstanding recreational lands and vast array of tourism services. A special angle is to highlight the stewardship of private landowners whose easements combine sustainable outdoor recreation with sustainable forest management.

- Finally, if the master plan and branding are successful, we will undoubtedly create hot spots where there are too many visitors. Monitoring visitor pressures and framing site-specific measures for visitor management, as we have done for Baxter State Parks and are now doing for the Allagash, will become more important.

Vision: A Multi-Modal Transportation Network for Long Term Sustainability

For many reasons, the time is right to dust off the Department of Transportation’s visionary “Explore Maine” plan. We should re-start the process of planning and feasibility studies for an integrated multi-modal transportation network -- train, ferry, bus, taxi, moped, and bike -- that can get tourists to and around Maine quickly and conveniently (and also serve Maine residents). Recent events underscore the importance of innovative and far-sighted thinking about transportation. Just this year, the Maine Legislature made a path breaking commitment to reduce our greenhouse gas emissions and dependence on imported fuels. On the coast, summer traffic congestion was again severe and bad air days continued in 2003. (DOT is to be applauded for initiating “Gateway One”, its long run planning work with 21 communities between Brunswick and Prospect, however its focus is restricted to road traffic management.) In the absence of attractive travel options, even the selective tourism growth proposed in this paper will intensify human and environmental costs and, ultimately, erode Maine’s “clean and green” image. In contrast, transport alternatives that reduced road and parking congestion and improved air quality would enhance Maine’s attractiveness. A key link in the network, the “Downeaster” rail service from Boston, is rolling and primed for higher speed service.⁶⁴

Transportation infrastructures are costly, and investing in a multi-modal system would be an expensive, long-term proposition. Even the current widening of just 40 miles of turnpike will cost \$70 million take six years from referendum to completion. Even so, a pilot project for the congested Kittery to Camden corridor could be an exciting piece of a coastal managed tourism growth strategy. Likewise a pilot transportation project linked to the suggested recreational lands master plan could be an exciting component of the Northern Forest tourism strategy.

Spreading Best Management Practices: A Tourism Extension Center

We have an opportunity to help hundreds more small tourism businesses move toward the excellent service quality and high management standards that mark Maine’s best practice outfitters, guide services, restaurants, inns, etc. One approach to consider is building an institution capable of offering recreation and hospitality firms one-stop business advisory services combined with off-season management training courses.⁶⁵ The focus would be core competencies: finance, investment analysis, market analysis, product design, production management, labor relations, and marketing. Teaching and advising might utilize case studies drawn from the state’s best practice tourism enterprises.

In thinking about how to organize these services for the diverse, numerous, and geographically dispersed businesses that make up our tourism economy, the venerable agricultural extension model is worth exploring. It combines a land-grant university base with regional field offices. The Maine Sea Grant and UM Cooperative Extension’s collaborative

⁶⁴ A recent *Maine Sunday Telegram* op ed – “So you get to North Station, and then what?” – is a reminder that train travelers from south of Boston continue to face obstacles beyond our control. (Ticker 2003)

⁶⁵ We might consider the top-to-bottom management evaluations that Plymouth State in Massachusetts offers tourism businesses. (Ireland)

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Marine Extension Team is a move in that direction. The University of Minnesota's Tourism Center offers a more firmly institutionalized example of the approach. (UMTC 1998) If Maine hopes to increase its market share of high-spending general tourists, we should also consider supplementing the community college system's culinary and hospitality programs with a first-class university degree program. Finally, we should assess the potential of "pre-season" training courses for front line employees, analogous to the quality-focused courses offered by Johnston State College as a service to the Vermont Hotel Keepers Association. (Vail and Kavanaugh 2000)

This may seem like a lot of institutional "overhead" investment. However, we should bear in mind that competing states already have such education, training, and extension programs. For that matter, so do some of Maine's other resource-based industries. Tourism, in contrast to our "mature" resource industries, has substantial untapped growth potential. But it will be realized only if many more businesses can offer the quality of service discriminating visitors demand.

Stronger Tourism Linkages to Agriculture, Fisheries, and Forest Products and to Maine Input Suppliers

When Governor Baldacci presented Harris Farm with the 2003 tourism excellence award, he sent a message about the great potential complementarities between agriculture and tourism. For farmers with an entrepreneurial bent, opportunities to earn supplemental income start with producing food for tourists, marketed directly via farm stands and farmers' markets or via eating establishments (including sporting camps, windjammers, etc.). The Harris Farm and others take advantage of a host of additional niche opportunities, ranging from bed-and-breakfasts to hayrides, ski trails, and maple sugaring events. Maine's Department of Agriculture and the tourism regions have become increasingly adept at brokering these marketing connections and advertising these attractions. Similar testimonials can be cited about fishing businesses that have added profitable sidelines such as wharfside restaurants and nature cruises. (Edwards 2002) Woodcrafts and furniture have a solid niche in tourist shops and at fairs around the state. A niche-widening experiment we should study is the Vermont Wood Manufacturing Association's Wood Products Tourism Planning and Technical Assistance Project. (NFC 2003)

Regional tourism organizations complement the Department of Agriculture's marketing efforts. For instance, the strategy of Maine Mountains Heritage is to tap complementarities between tourism and resource-based industries, by packaging farm and wood products enterprises with other cultural and nature-based attractions. The tourism extension center, described above, could be a key to giving more farmers and fishers the skills and confidence to add tourist services to their product portfolios.

New Ways of Thinking about Maine Tourism

The problems and potential of Maine tourism have been debated for decades, so it would be a stretch to claim that this paper presents any truly new ideas. However, it is hoped that the preceding assessment of strengths, weaknesses, challenges, and opportunities will add fresh perspectives on several issues.

First, challenges and opportunities take on a different look when tourism strategy is *not* built on the unquestioned premise of growth for growth's sake, but rather on a set of core values that include: sustaining the natural and cultural endowments that make Maine so special; strengthening complementarities between tourism and other resource-based industries; enhancing the vitality of tourism's host communities' and quality of life for their residents; generating demand by optimizing the quality of tourist products and amenities; and creating well compensated employment that spreads prosperity.

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Maine is on the threshold of a new era in tourism planning, with these core values motivating initiatives like the Tourism Commission's Natural Resources Committee, the Gulf of Maine Council, the Maine Mountain Heritage Network, and other state, regional, and community efforts.

Second, getting tourism strategy right requires substantially more state investment. This is well justified, because strategically chosen and adequately funded public investments will leverage high returns, not only to particular tourism businesses and host communities, but to the economic health of Maine's distressed rural regions. Proposed investments, whose components have already been discussed under several headings, run the gamut from strengthening the MOT's planning, technical assistance, and promotional capacities, to business management assistance, frontline worker training, public lands infrastructures, BPL and IFW staffing, transportation alternatives, market research, and carrying capacity analysis. Maine already supports other industries in many ways – via TIFs, BETR, customized worker training, university research, current use taxation, etc. Greater public investment in tourism -- with its contribution of 70,000 jobs, 6% of gross state product, and \$340 million/year in state revenues -- is surely justified.

Third, the question arises how to finance the investments sketched above. There is a strong case that tourists are under-charged for the natural amenities and tax-financed infrastructures they enjoy, as well as the peak season *disamenity costs* they impose on many Maine communities and residents. Maine's meals and lodging taxes are below the New England median; we charge no sales tax on amusements and recreations; our state park fees are nominal; we do not raise turnpike tolls at peak hours. Over the years, an extensive menu of potential funding sources has been offered, including those just mentioned plus others: a share of the gasoline tax (as we currently dedicate to snowmobile and ATV trails); a small real estate transfer tax on shorefront properties, a saltwater fishing license fee, a local option sales tax, etc. (MVTAC 1974, Vail et al. 1998) We can design an equitable and cost-effective revenue package to generate substantially more revenue for the public investments Maine needs for a flourishing and sustainable tourism.

Fourth, anecdotal information is not a sound basis for tourism planning. Particularly in coastal communities and regions, the time is long past due for a thorough and unbiased assessment of summer tourism's social, economic, and environmental benefits and costs. Citizens need and deserve to understand the *incremental effects* of tourism growth, both positive and negative, so they can make informed, democratic choices about acceptable levels of change. For scores of Maine communities, *smart growth* is very much about managing tourism growth intelligently.

Fifth, for entrepreneurially-minded farm, fishing, and wood products businesses, there are untapped opportunities to develop profitable supplementary enterprises serving tourists. These range from simple direct marketing of farm and seafood products to value-added services like farm B&B's, evening boat cruises, and aquaculture tours (ideally including meals featuring super-fresh local products). For some businesses, sideline tourist activities will be a key to long-term sustainability. There are numerous low cost ways to help entrepreneurs make the transition.

Sixth, without another visitor setting foot in Maine, tourism's contribution to income and employment could be increased by linking tourism businesses more effectively with in-state suppliers of everything from hotel furniture to tax consulting, and naturally including farm, fish, and wood products.

Seventh, the largest under-exploited group of potential tourists is "us": Mainers who currently vacation out-of-state. The destination-creating, quality improving, and branding strategies described here should focus more effectively on enticing Mainers to find leisure enjoyment at home.

Near Term Action Steps

Most of Maine's tourism challenges and opportunities require medium term, multi-year responses. Some, particularly development of a multi-modal transportation system, are long term and expensive. Others, especially strengthening small business training and assistance and increasing the number of livable wage jobs, are major challenges for the entire Maine economy. Although there are no quick fixes for most of tourism's long-evolving problems, we should address them now, decisively and optimistically. The good news is that much of what we need to do to seize promising tourism opportunities builds upon processes and investments that are already underway.

Commitments articulated by the Governor and initiatives launched by the Governor's Office are the most effective ways to respond to five of tourism's core challenges and opportunities:

1. Private Lands: A Plan for Sustained Multiple-use Management and Recreational Access

Broaden and revitalize the Land and Water Resources Council, turning it into a blue ribbon taskforce of landowners, tourism and recreation interest groups, conservation organizations, and relevant state agencies. It would focus on both forest regions and the coast, and it would build on the work of the present Council, the DOC's land use "think tanks," the DMR's Waterfront Coalition, and the Governor's Council on Sportsmen's-Landowner Relations.

2. Public Lands and Easements: A Recreation Master Plan.

Charge LMF, BPL, IFW and MOT to collaborate with the tourism regions, recreation user groups, and conservation organizations in framing a strategy for acquisition, management, and promotion of the public's and the land trusts' expanding Northern Forest and Downeast Lakes domain. This is critical both for tourism branding and long term resource conservation.

3. The Maine Office of Tourism: A Broader Mandate and Strengthened Capabilities.

If Maine is to take advantage of the opportunities and overcome the weaknesses described in this paper, we need a tourism agency with substantially greater capacity in the areas of planning, research design, technical assistance, and financial assistance – as well as MOT's traditional strength in promotion. The strategic emphasis on regional tourism planning in recent years has been a major advance, with MOT providing financial and technical assistance. There appears to be consensus that the region-centered approach is a *key* to sustainable tourism development. MOT's enhanced capabilities would therefore be largely channeled into its work with the regions.

4. Municipal Growth Management and Comprehensive Planning: Better Technical Assistance

Many tourist-dependent municipalities seek tourism growth but are wary of its downside. They need tools to assess tourism's economic, social and environmental benefits and costs systematically, to understand carrying capacity limits, and to manage tourism growth accordingly. The State Planning Office's capacity to offer technical assistance in these areas should be expanded.

5. Revival and Updating of the "Explore Maine" Transportation Plan and Announcement of a Commitment to Livable Wage Jobs

These are long-term, economy-wide undertakings; nonetheless, they are vitally important for tourism. Continued tourism growth is simply not sustainable with over 90% of visitors traveling by personal vehicle. And prosperity will not be widely shared so long as fewer than

half of tourism-related jobs pay a livable wage. (Statewide, about 67% of jobs pay a livable wage and the Maine Economic Growth Council's target is 85% livable wage jobs by 2005.)

The Natural Resources Committee of the Maine Tourism Commission is in an excellent position to address three priority challenges as it prepares its report to the Legislature in 2004:

6. The Brand Development Campaign

The NRC, with consulting assistance from experts in national and international market trends, can take great strides toward understanding the blend of tourism products, consumers, and promotional techniques that can most effectively position the interior and downeast regions for sustainable tourism growth. We need, in particular, a better understanding of how to entice more coastal tourists inland, and to make interior Maine a magnet for Mainers planning overnight leisure trips.

7. Assess the Potential of State-backed Ecotourism Certification

Genuine ecotourism (by whatever name we choose to call it) not only protects the environment and benefits certified business operators, but also has the potential to strengthen the state brand. The NRC should assess ecotourism's potential for Maine and consider alternative ways for the state to collaborate with industry groups and nonprofits in designing and administering ecotourism accreditation.

8. Methods to Assess Carrying Capacity Limits and Identify Tourism Hot Spots

Sustainable tourism development requires a much more thorough knowledge of tourism's present environmental impacts and social stresses at different sites and seasons. To manage hot spot problems, we must be able to identify them systematically and forecast the incremental impacts of further tourism growth.

9. A Prioritized Tourism Research Agenda

This paper has identified many topics, from environmental impact analysis to niche market assessment, for which current research and data bases are inadequate. Strategic planning requires such information and analysis. NRC should identify and prioritize major knowledge gaps and propose a research program (and budget) to fill the most critical gaps within a couple of years.

State agencies, the University of Maine, and the Maine Community College System are best situated to plan and carry out three economic development initiatives:

10. Strengthen Tourism's Linkages with Agriculture, Fisheries, and Forest Products

DMR, DAFRR and MOT should be funded to explore measures that would increase tourism businesses' purchases of farm, forest, and fishery products, and that would encourage more farmers and fishers to supplement their incomes by offering attractive tourism services, such as B&Bs, nature cruises, and hands-on learning experiences.

11. Turn Leakages into Linkages

DECD should develop a strategy to connect tourism businesses more effectively with prospective Maine suppliers, generating more in-state income and jobs for each dollar of tourist spending. This is in large part a marketing and information function, but it also entails helping potential suppliers adjust their product specifications to the particular needs of Maine restaurants, inns, outfitters, and other tourism businesses.

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12. Spreading Best Practices: A Tourism Extension Center

The University of Maine, the Community College System, and DECD should be funded to explore the feasibility and the optimum design of an extension program for small businesses that offer hospitality and recreation services. The applicability of the agricultural extension model should be assessed.

These twelve suggestions put more emphasis on making commitments and initiating explorations than on immediate action steps “on the ground.” Taken together, however, they are a foundation on which Maine can build sustainable nature-based tourism.

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